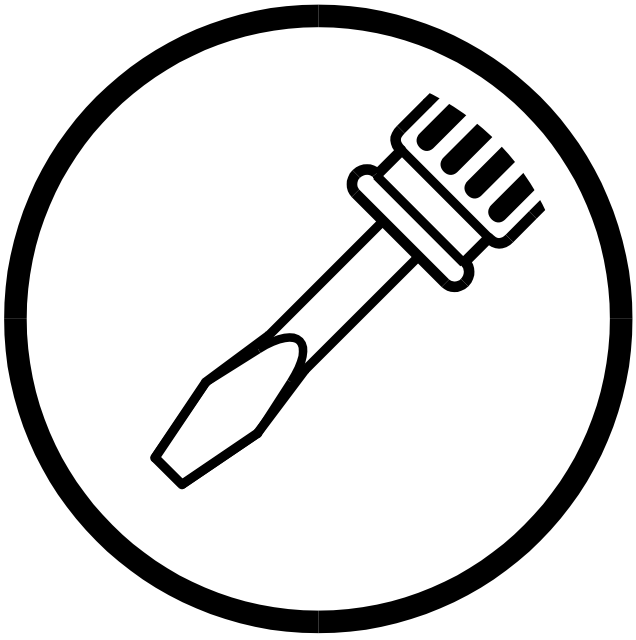
SERVICE MANUAL

CB3-B916A
CB3-B917A

Please read this manual before making any adjustments.

CHAINSTITCH BUTTON SEWER
CHAINSTITCH BUTTON SEWER WITH THREAD TRIMMER



brother®

This service manual is intended for B916A/B917A; be sure to read the B916A/B917A instruction manual before this manual.
Carefully read the "SAFETY INSTRUCTIONS" below and the whole of this manual to understand this product before you start maintenance.
As a result of research and improvements regarding this product, some details of this manual may not be the same as those for the product you purchased.
If you have any questions regarding this product, please contact a Brother dealer.

SAFETY INSTRUCTIONS

1. Safety indications and their meanings

This service manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people.
The meanings of these indications and symbols are given below.

Indications

DANGER	The instructions which follow this term indicate situations where failure to follow the instructions will almost certainly result in death or severe injury.
CAUTION	The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.

Symbols

.....This symbol (△) indicates something that you should be careful of. The picture inside the triangle indicates
the nature of the caution that must be taken.
(For example, the symbol at left means “beware of injury”.)

.....This symbol ( ) indicates something that you must not do.

..... This symbol (●) indicates something that you must do. The picture inside the circle indicates the nature of the thing that must be done.
(For example, the symbol at left means “you must make the ground connection”.)

WARNING

Do not put your hand into any openings near the belt, as your hands could get caught in the belt, and serious injury could result.

CAUTION

Environmental requirements

Use the sewing machine in an area which is free from sources of strong electrical noise such as high-frequency welders.
Sources of strong electrical noise may cause problems with correct operation.

Any fluctuations in the power supply voltage should be within ±10% of the rated voltage for the machine.
Voltage fluctuations which are greater than this may cause problems with correct operation.

The power supply capacity should be greater than the requirements for the sewing machine's electrical consumption.
Insufficient power supply capacity may cause problems with correct operation.

The ambient temperature should be within the range of 5°C to 35°C during use.
Temperatures which are lower or higher than this may cause problems with correct operation.

The relative humidity should be within the range of 45% to 85% during use, and no dew formation should occur in any devices.
Excessively dry or humid environments and dew formation may cause problems with correct operation.

Avoid exposure to direct sunlight during use.
Exposure to direct sunlight may cause problems with correct operation.

In the event of an electrical storm, turn off the power and disconnect the power cord from the wall outlet.
Lightning may cause problems with correct operation.

Installation

Machine installation should only be carried out by a qualified technician.

Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.

The sewing machine weighs more than 25 kg. The installation should be carried out by two or more people.

Do not connect the power cord until installation is complete, otherwise the machine may operate if the pedal is depressed by mistake, which could result in injury.

Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.

Install the belt covers to the machine head and motor.

If using a work table which has casters, the casters should be secured in such a way so that they cannot move.

Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
Keep the oil out of the reach of children.

⚠ CAUTION

Sewing

This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.

The sewing machine should not be used for any applications other than sewing.

Be sure to wear protective goggles when using the machine.
If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.

Turn off the power switch at the following times, otherwise the machine may operate if the pedal is depressed by mistake, which could result in injury.
* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
- When threading the needle
- When replacing the needle
- When not using the machine and when leaving the machine unattended

If using a work table which has casters, the casters should be secured in such a way so that they cannot move.

When turning the machine pulley by hand in order to check the needle down position in the hole of the button, turn the pulley until the needle is at the final position after one cycle.
If the needle is at a point midway through the cycle when the power is turned on, the machine will immediately start operating, which could result in injury.

Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.

Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.

If an error occurs in machine operation, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest Brother dealer or a qualified technician.

If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.

Cleaning

Turn off the power switch before starting any cleaning work, otherwise the machine may operate if the pedal is depressed by mistake, which could result in injury.
* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
Keep the oil out of the reach of children.

Maintenance and inspection

Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.

Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.

Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the pedal is depressed by mistake, which could result in injury.
* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
- When carrying out inspection, adjustment and maintenance
- When replacing consumable parts such as the loopers and knife.

When turning the machine pulley by hand, turn the pulley until the needle is at the final position after one cycle.
If the needle is at a point midway through the cycle when the power is turned on, the machine will immediately start operating, which could result in injury.

If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.

Use only the proper replacement parts as specified by Brother.

If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.

Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

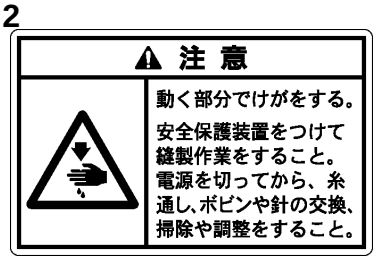
3. Warning labels

The following warning labels appear on the sewing machine.

Please follow the instructions on the labels at all times when using the machine. If the labels have been removed or are difficult to read, please contact your nearest Brother dealer.

1

2



Safety devices:
Eye guard, Finger guard,
Needle bar cover, Pulley covers, etc.

3

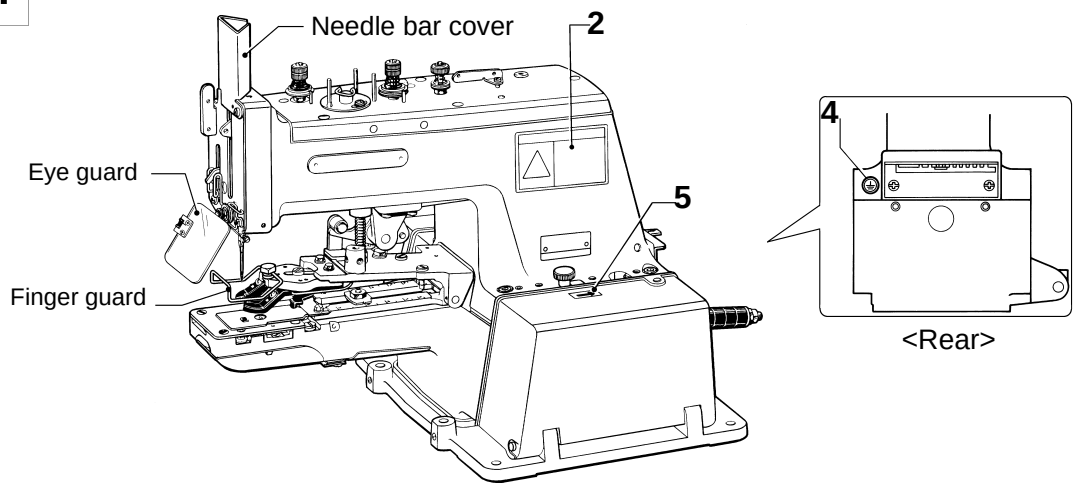
Attach the high temperature label to the motor in a place where it will be easily visible.

4

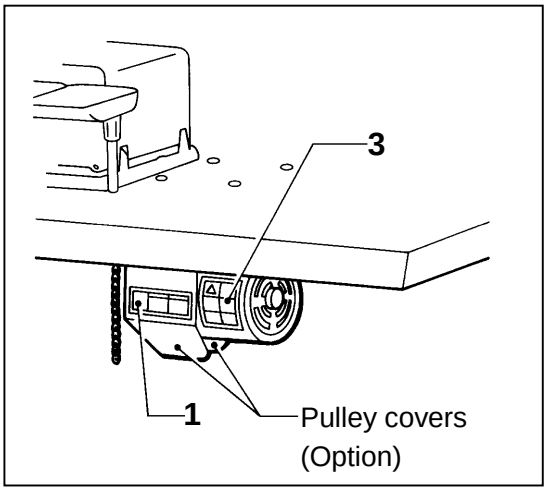
Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

5

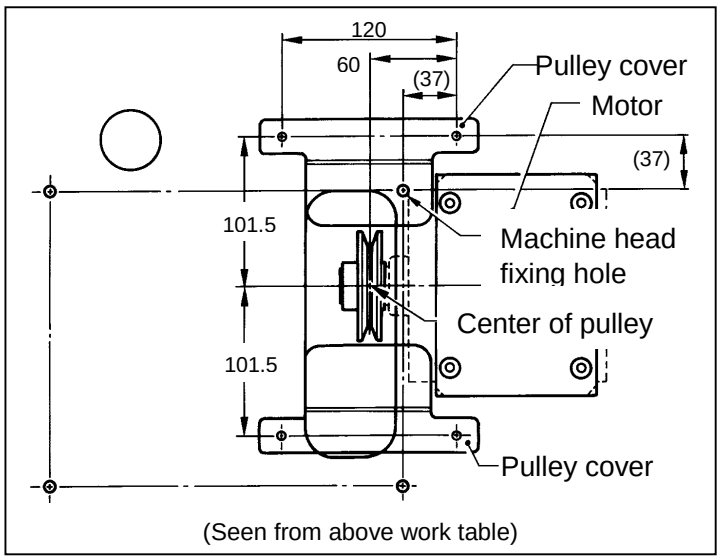
Direction of operation



<Motor>



<Diagram of installation position for pulley covers (Option)>



(Seen from above work table)

CONTENTS

1. MECHANICAL DESCRIPTIONS ----------1

1-1. Start mechanism 1
1-2. Number of stitches changing 2
1-3. Brake mechanism 3
1-4. Needle bar mechanism 4
1-5. Looper mechanism 4
1-6. Feed mechanism 5
1-7. Thread trimmer mechanism 7
1-8. Button clamp mechanism 8
1-9. Tension release mechanism 9

2. DISASSEMBLY ----------10

2-1. Cover 10
2-2. Clutch 10
2-3. Button clamp 11
2-4. Looper 12
2-5. Number of stitches changing 13
2-6. Needle bar 14

3. ASSEMBLY AND ADJUSTMENT----15

3-1. Needle bar 15
3-2. Number of stitches 17
3-3. Loopre 19
3-4. Button clamp 24
3-5. Clutch 25
3-6. Cover 26

4. REPLACEMENT OF PARTS----------28

4-1. Horizontal feed cam, vertical feed cam, worm gear, worm, number of stitches adjustment cam 28
4-2. Cushion rubber 33
4-3. Driving lever pawl 34

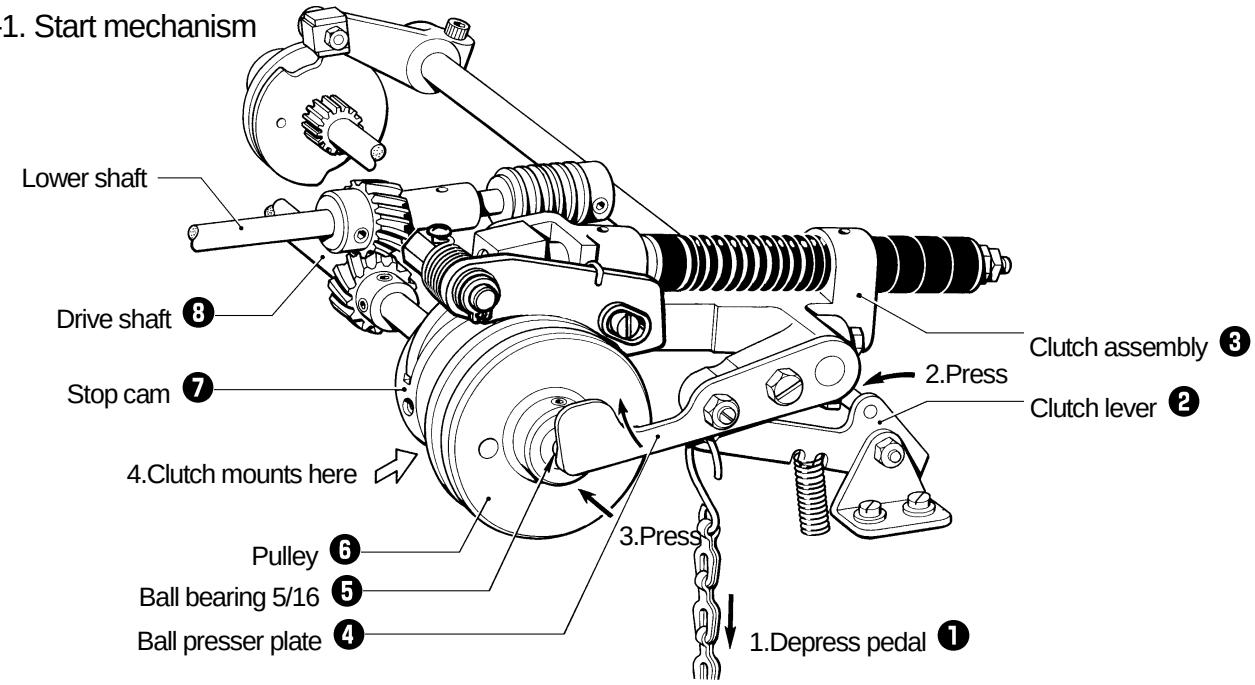
5. ADJUSTMENTS----------35

5-1. Needle bar height 35
5-2. Loop spreader 35
5-3. Point where needle and looper meet 35
5-4. Clearance between needle bar and looper 35
5-5. Needle guard 35
5-6. Fixed knife 35
5-7. Movable knife 36
5-8. Stitch number 36
5-9. Number of stitches adjustment cam 36
5-10. Pawl of thread trimming lever 36
5-11. Button clamp driving lever 36
5-12. Worm and worm gear backlash 37
5-13. Pulley clearance in thrust direction 37
5-14. Slider 37
5-15. Auxiliary tension timing 38
5-16. Thread tension timing 38
5-17. Loop spreader timing 38
5-18. Forward and reverse feed 38
5-19. Button clamp installation 39
5-20. Elevation amount of button clamp 39
5-21. Feed timing 39
5-22. Clutch lever 39
5-23. Brake 39
5-24. Button clamp opener (B917A) 40
5-25. Thread take-up lever 40
5-26. Main tension 40
5-27. Rotor 41
5-28. Button clamp pressure 41

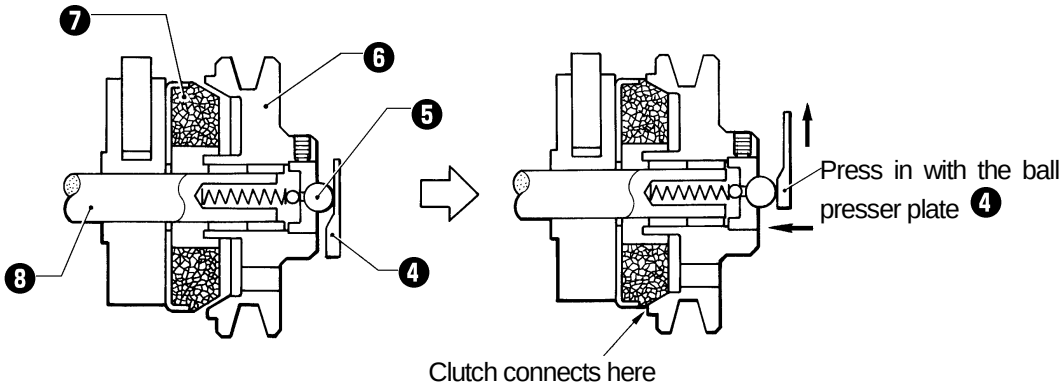
6. Troubleshooting----------42

1. MECHANICAL DESCRIPTIONS

1-1. Start mechanism

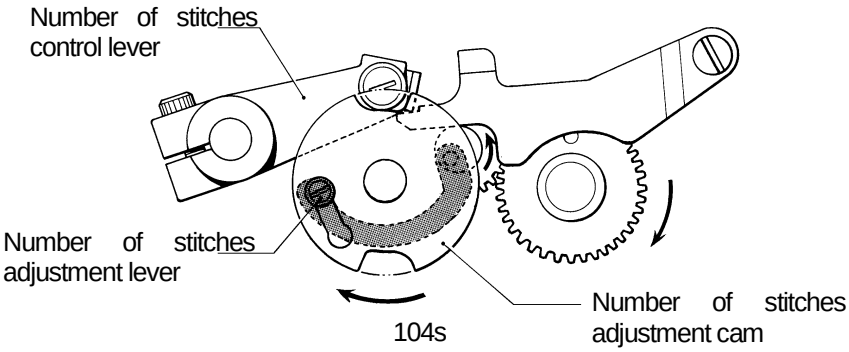


101s



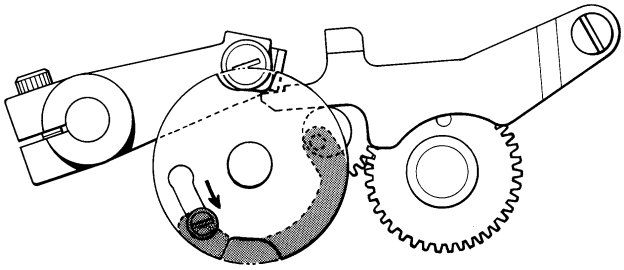
102s

1-2. Number of stitches changing



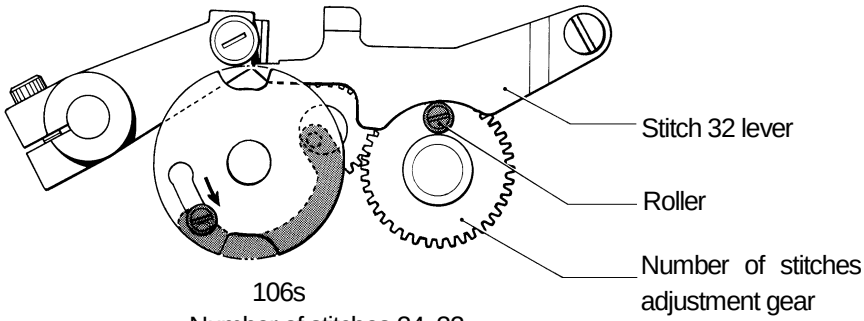
104s

Number of stitches 6, 8



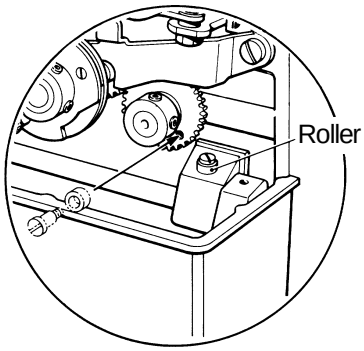
105s

Number of stitches 12, 16



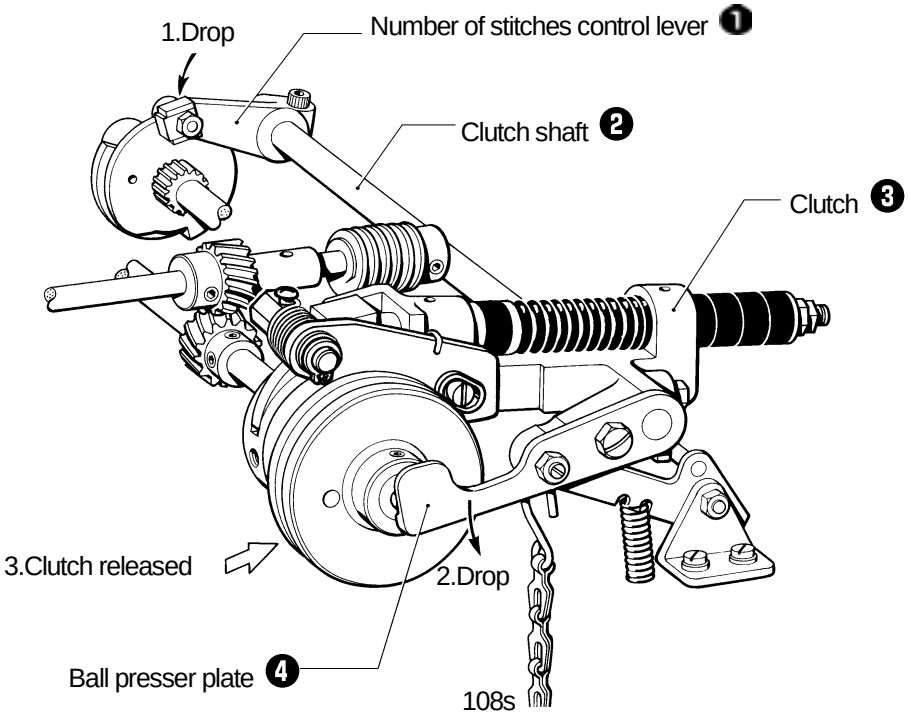
106s

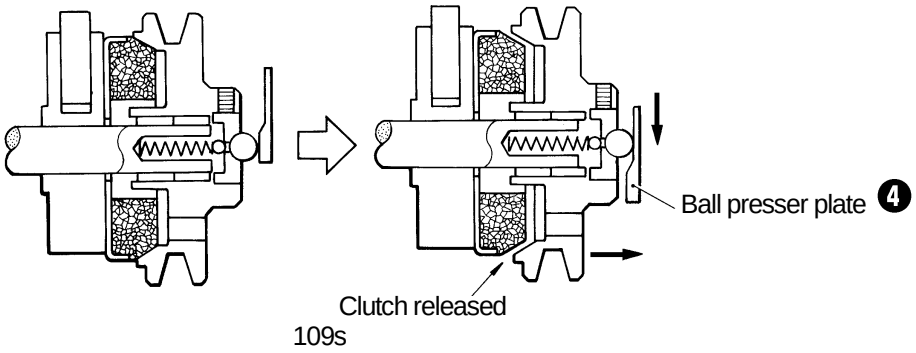
Number of stitches 24, 32



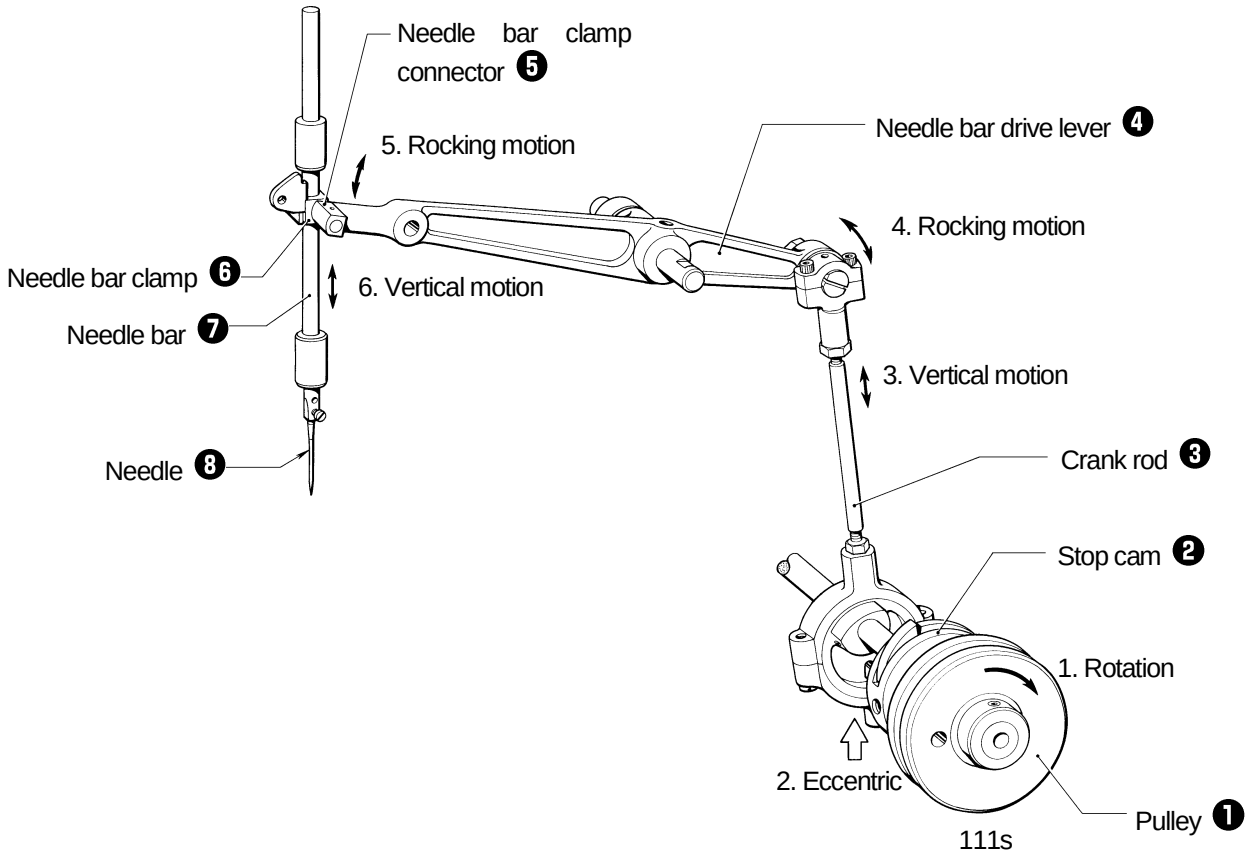
107s

1-3. Brake mechanism

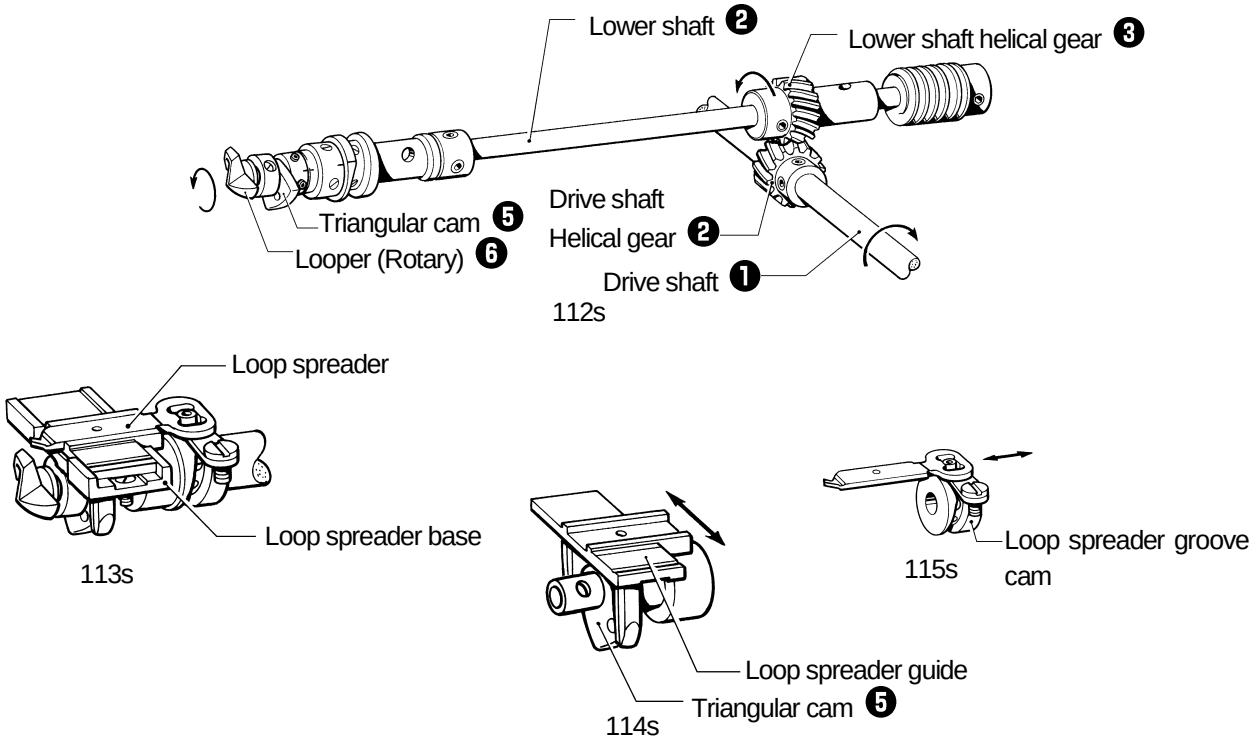




1-4. Needle bar mechanism

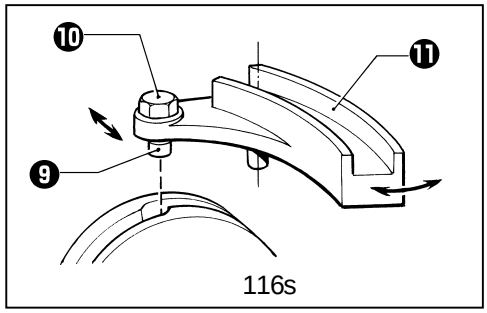


1-5. Looper mechanism

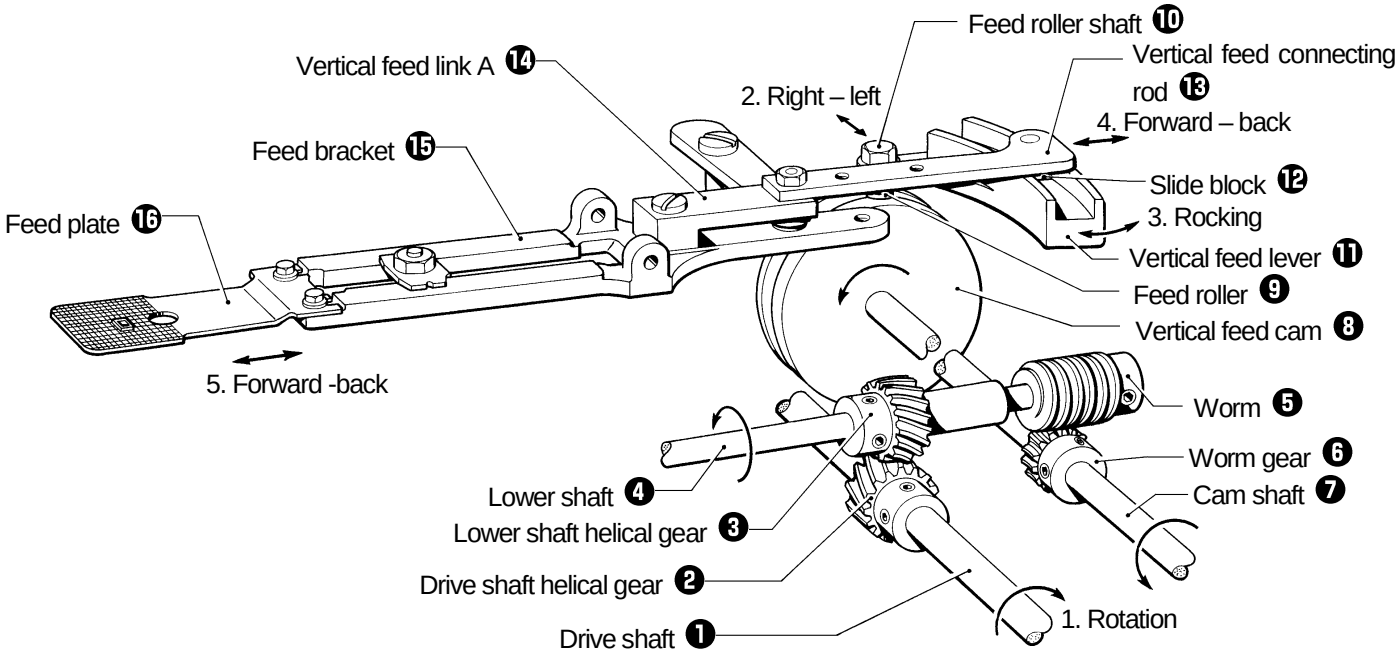


1-6. Feed mechanism

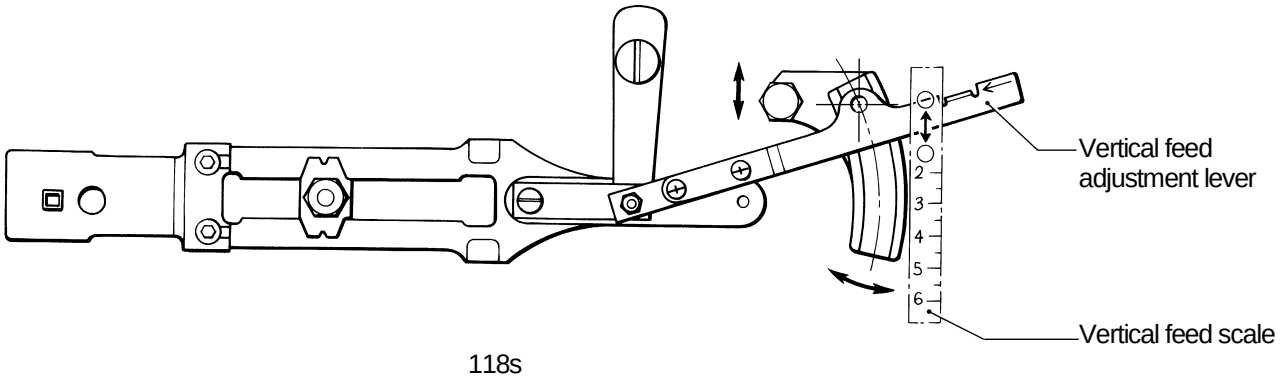
1-6-1. Vertical feed mechanism



116s

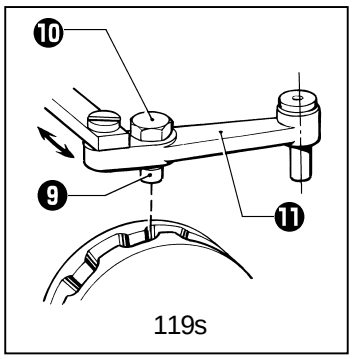


117s

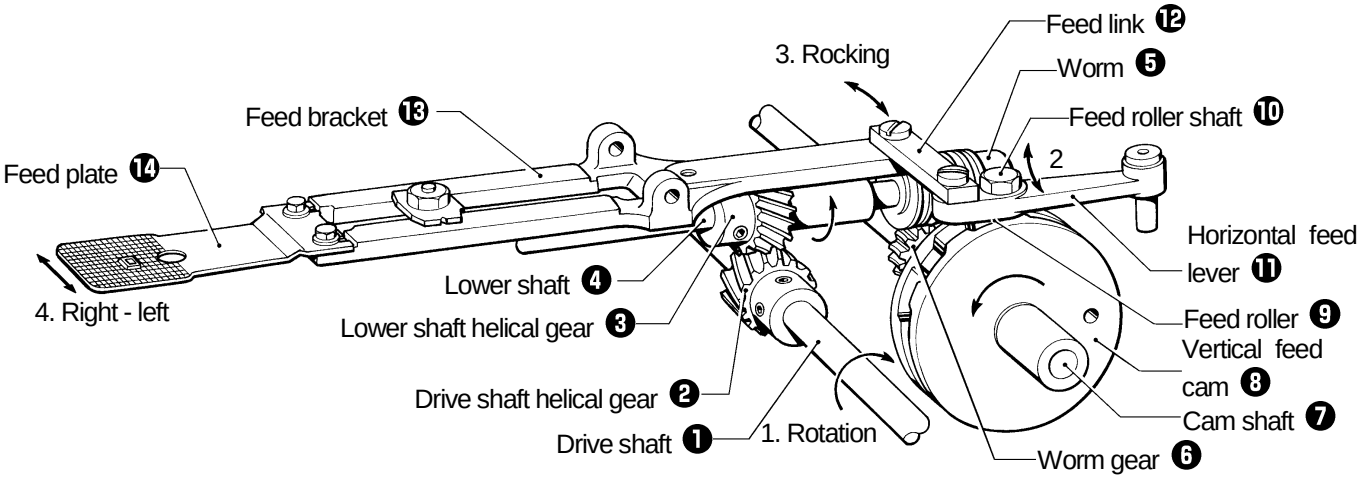


118s

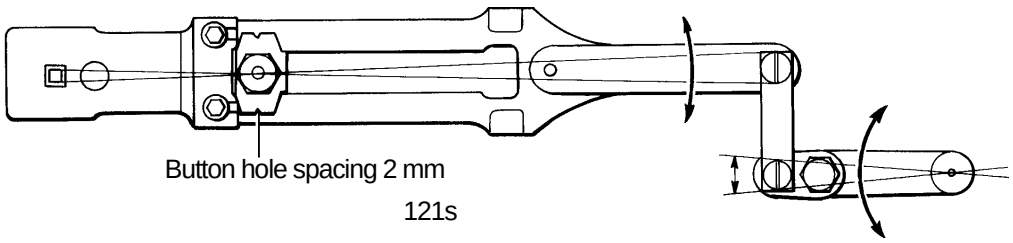
1-6-1. Horizontal feed mechanism



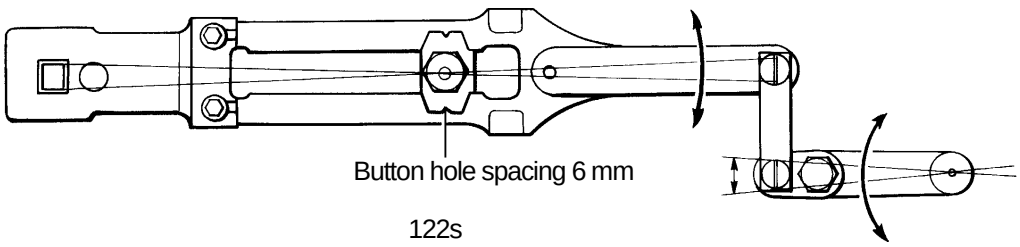
119s



120s

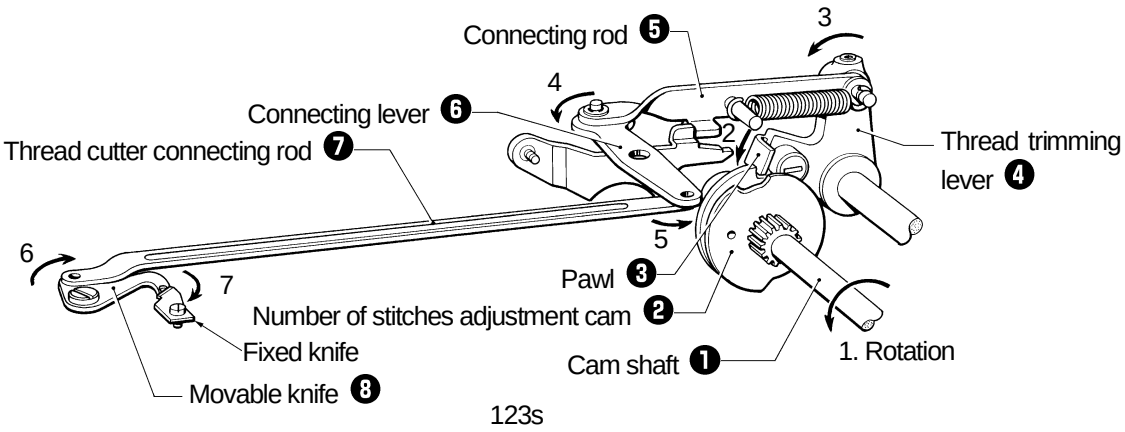


121s

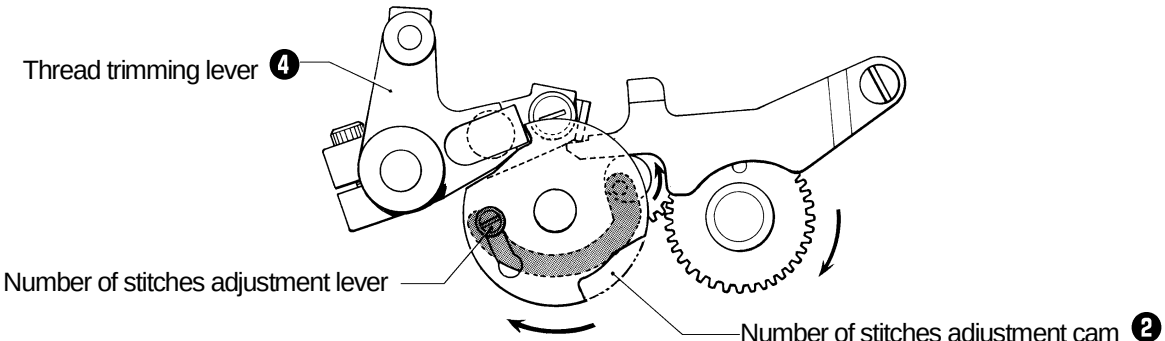


122s

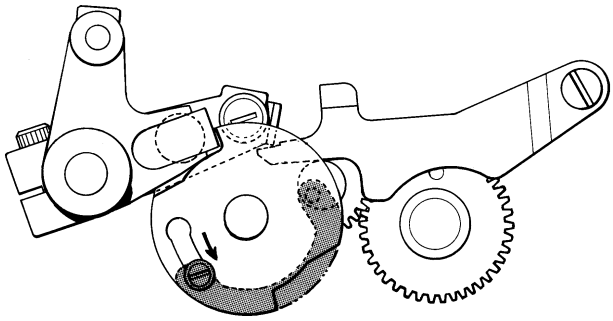
1-7. Thread trimmer mechanism



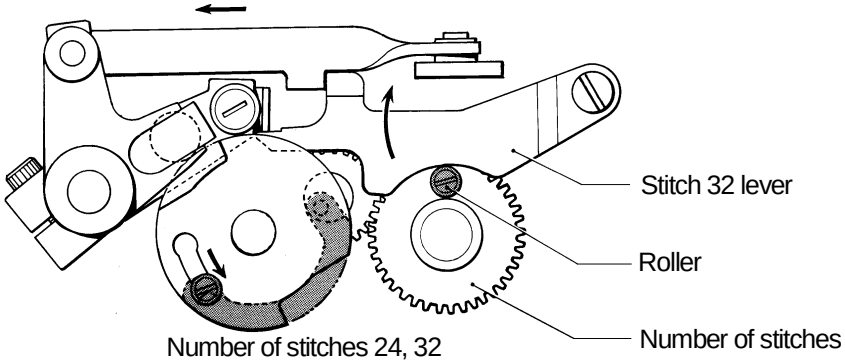
123s



Number of stitches 6, 8
124s



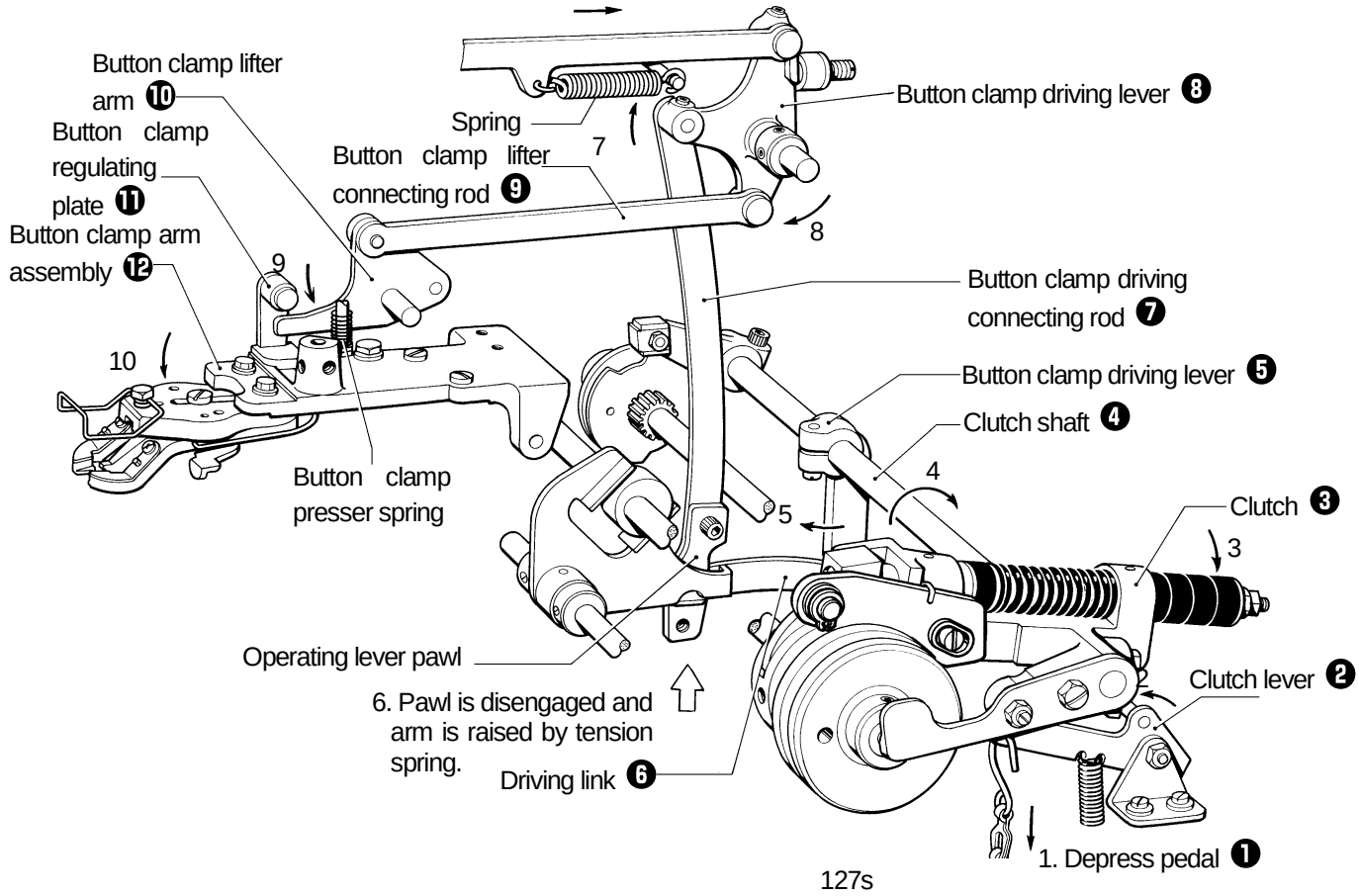
Number of stitches 12, 16
125s



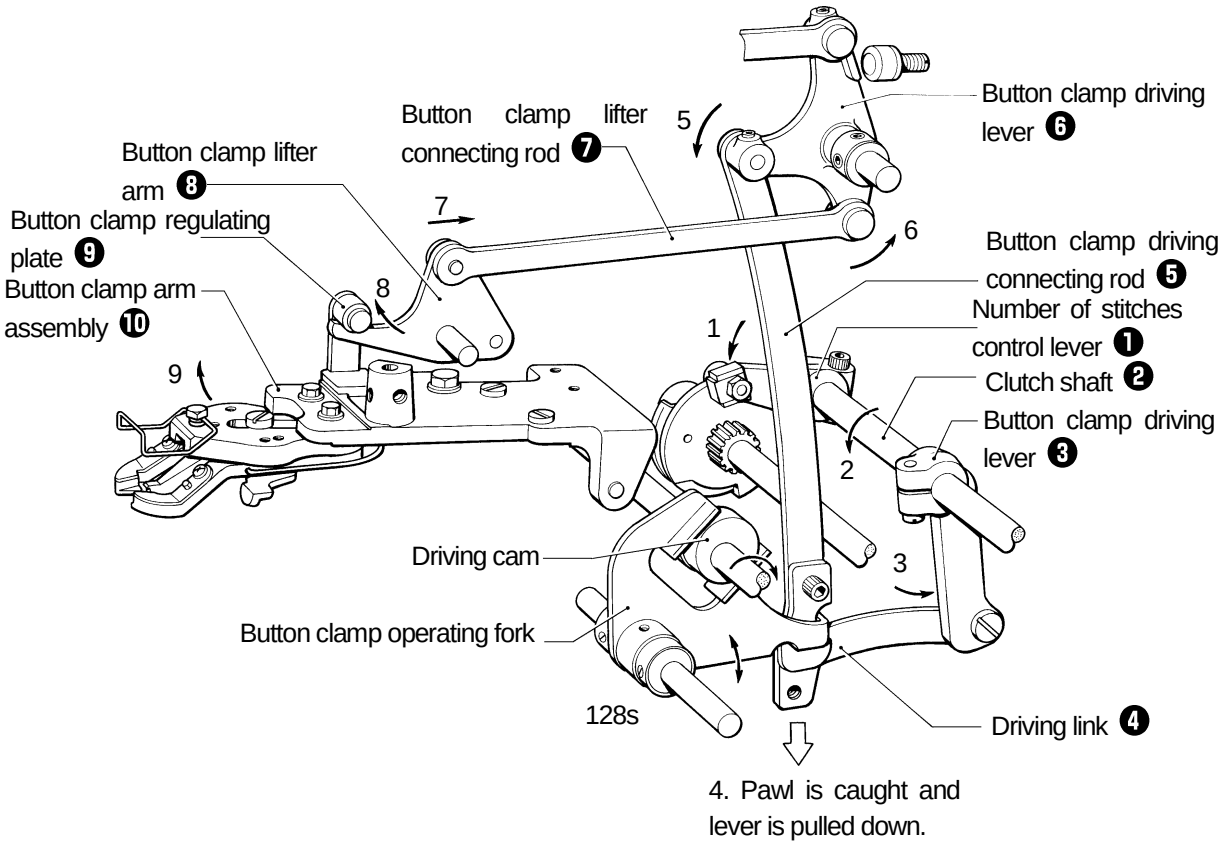
Number of stitches 24, 32
126s

1-8. Button clamp mechanism

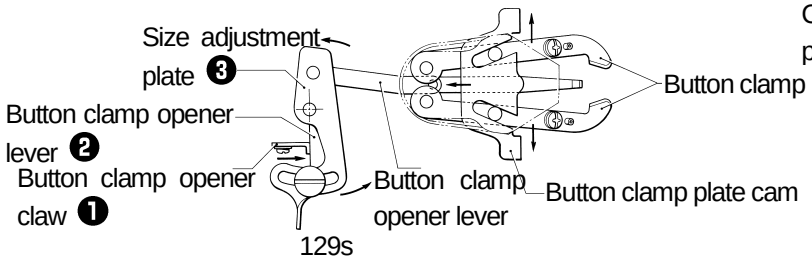
1-8-1. Button clamp descent (sewing start)

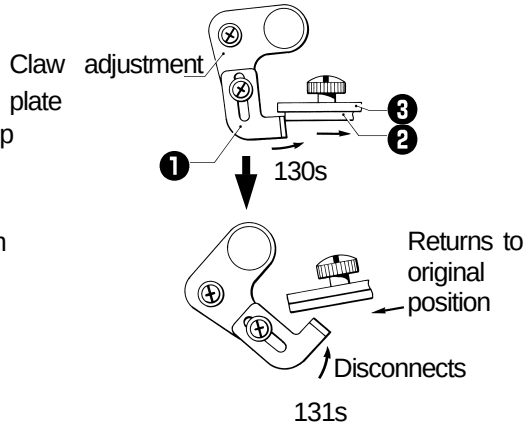

Button clamp lifter arm ⑩
Button clamp regulating plate ⑪
Button clamp arm assembly ⑫
Spring
Button clamp lifter connecting rod ⑨
Button clamp driving lever ⑧
Button clamp driving connecting rod ⑦
Button clamp driving lever ⑤
Clutch shaft ④
Clutch ③
Clutch lever ②
Button clamp presser spring
Operating lever pawl
6. Pawl is disengaged and arm is raised by tension spring.
Driving link ⑥
1. Depress pedal ❶
127s

1-8-2. Button clamp lift (machine stop)

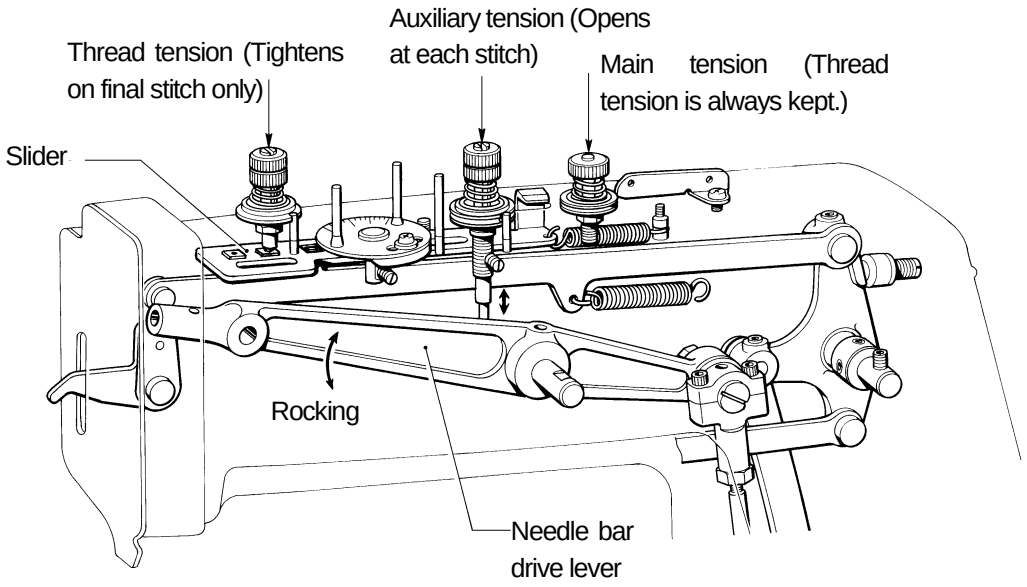

Button clamp lifter arm ⑧
Button clamp regulating plate ⑨
Button clamp arm assembly ⑩
Button clamp lifter connecting rod ⑦
Button clamp driving lever ⑥
Button clamp driving connecting rod ⑤
Number of stitches control lever ❶
Clutch shaft ❷
Button clamp driving lever ③
Driving cam
Button clamp operating fork
Driving link ④
128s
4. Pawl is caught and lever is pulled down.

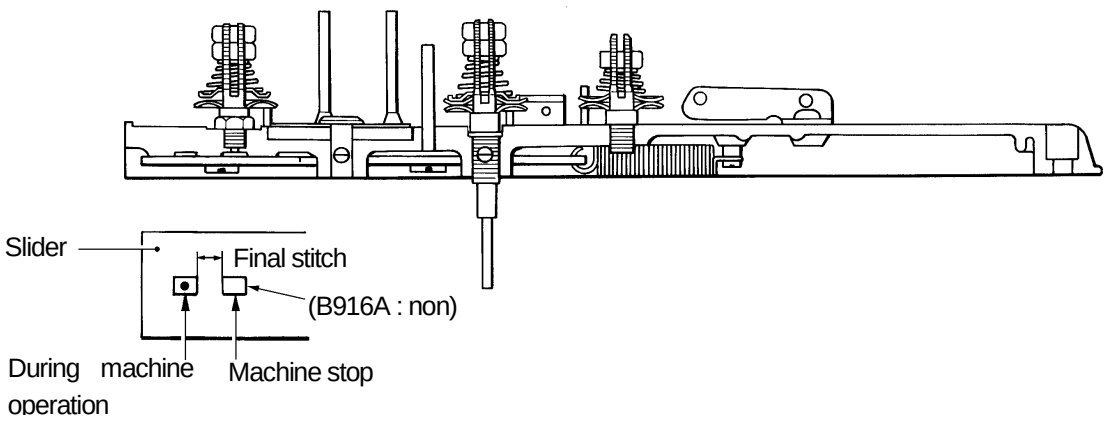
1-8-3. Button clamp opener [B917A]





1-9. Tension release mechanism





	Thread tension	Auxiliary tension	Main tension
Machine stopped	O	O	X
Sewing	O	Opens at each stitch	X
Final stitch B917A	O -> X -> O	Differs according to needle bar position	X
B916A	O -> X -> X		

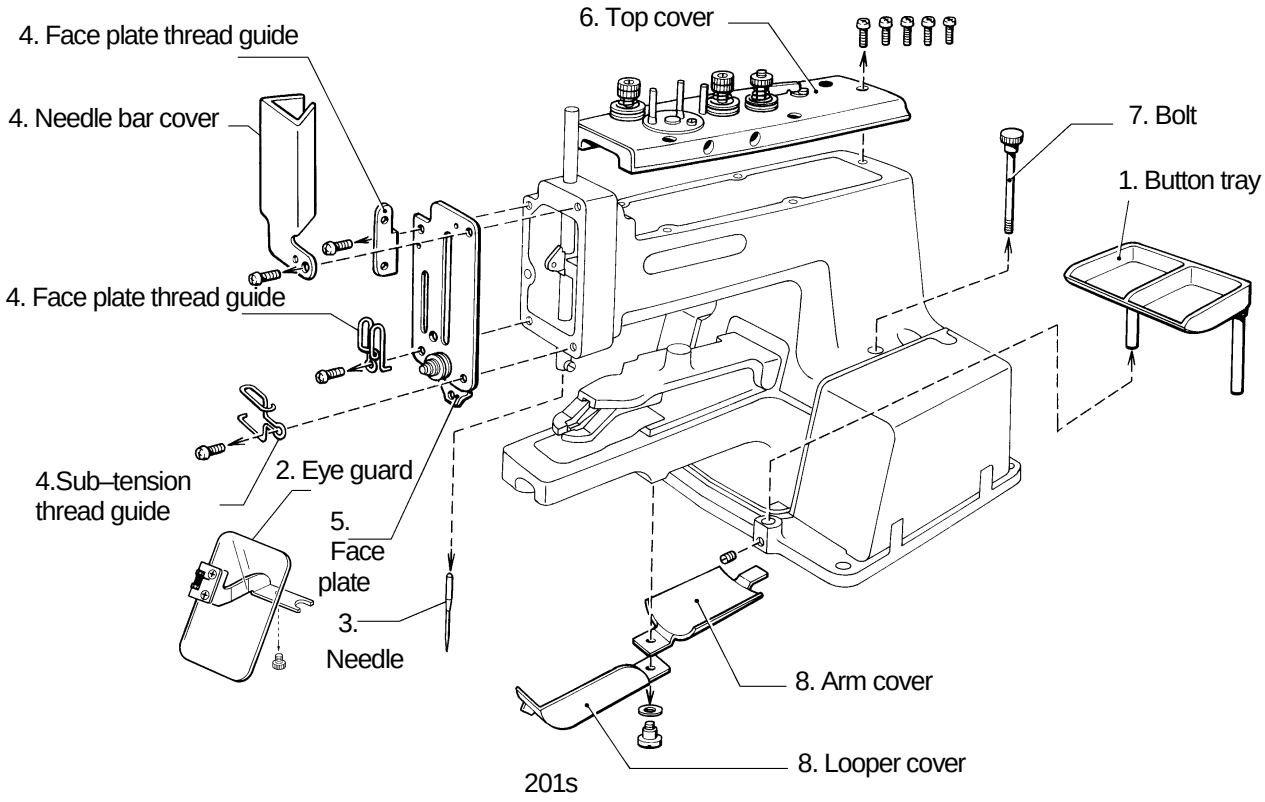
O-Tension discs open
X-Tension discs close

2. DISASSEMBLY

⚠ CAUTION

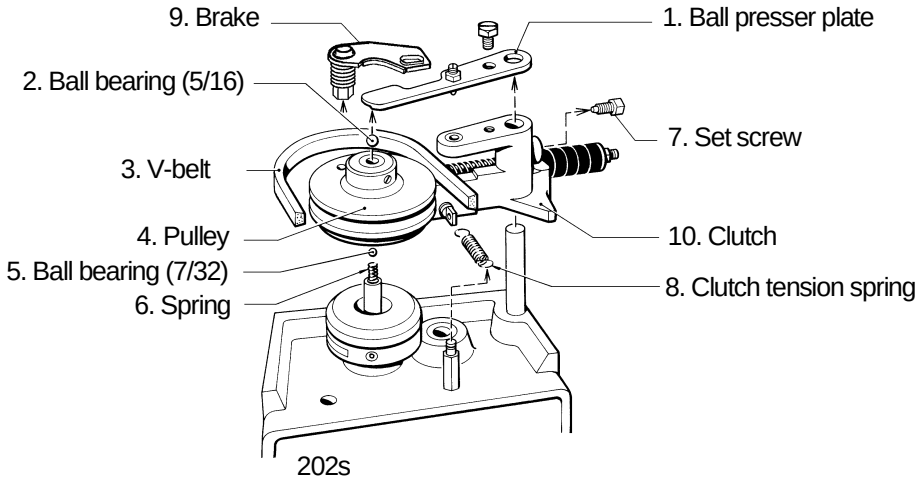
- Turn off the power switch before starting any cleaning work, otherwise the machine may operate if the pedal is depressed by mistake, which could result in injury.
  * The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
- Disassembly of the sewing machine should only be carried out by a qualified technician.
- If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.
- Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.
  Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
  Keep the oil out of the reach of children.
- Use only the proper replacement parts as specified by Brother.
- Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

2-1. Cover



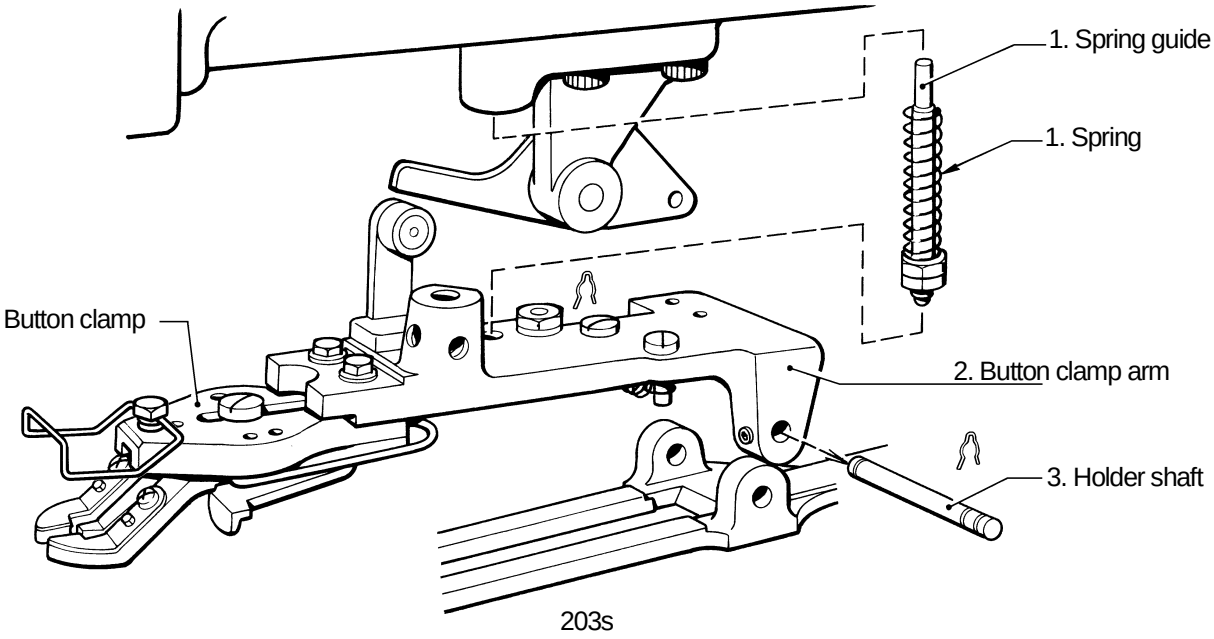
201s

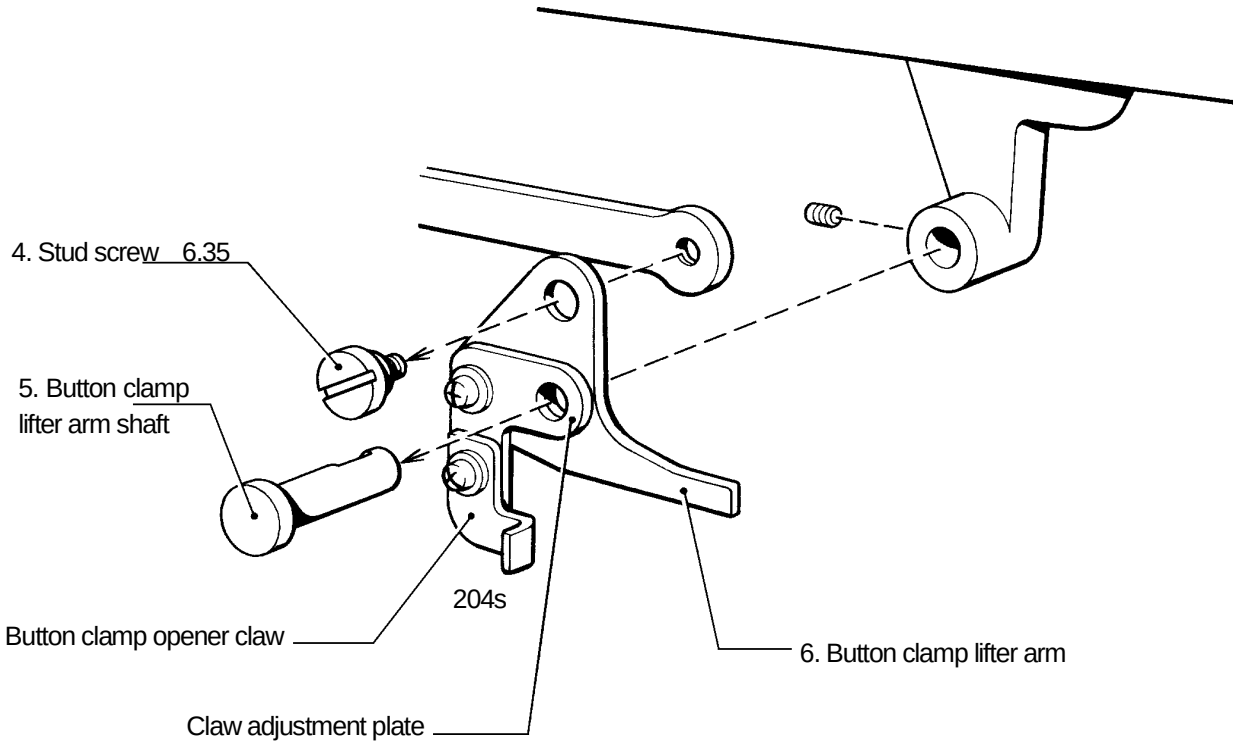
2-2. Clutch



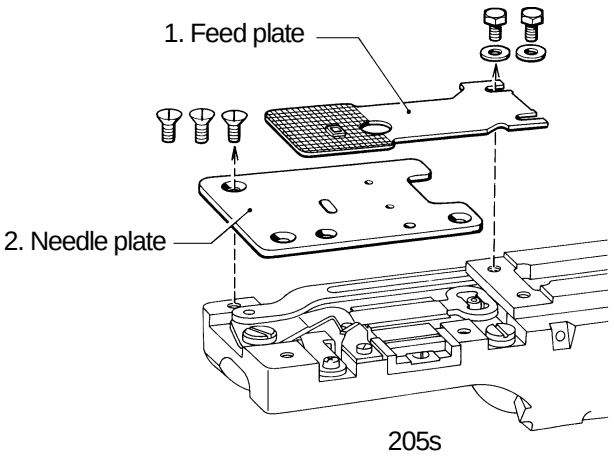
202s

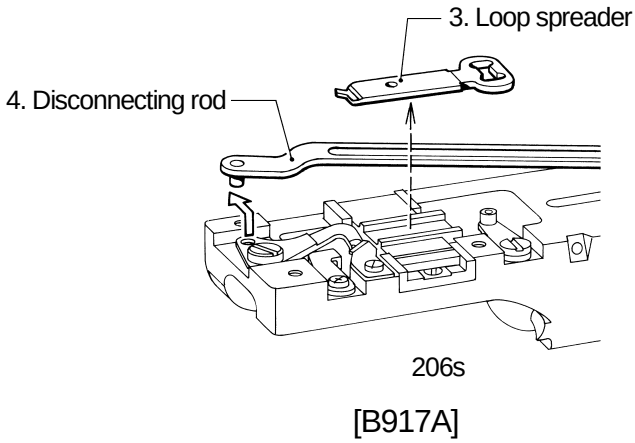
2-3. Button clamp lifter

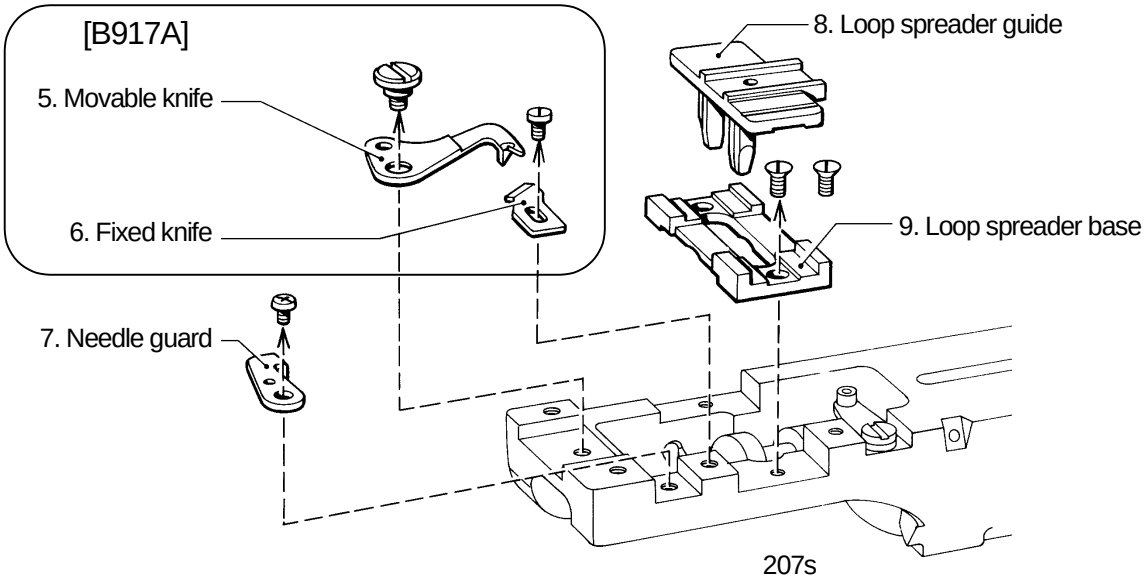


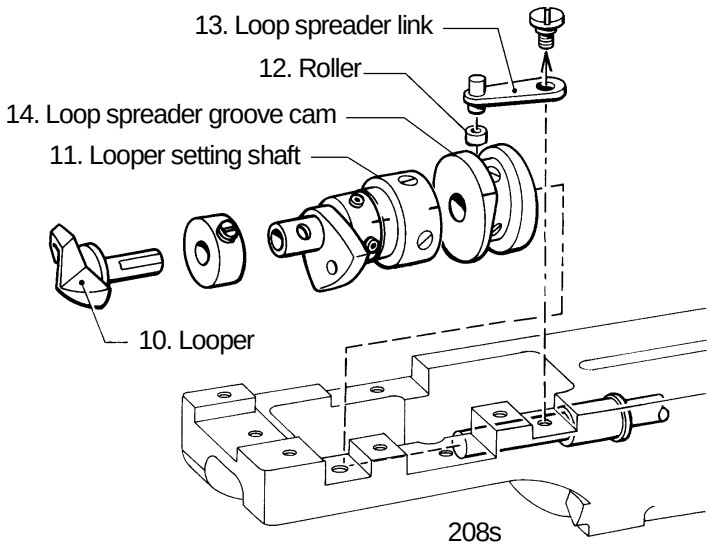


2-4. Looper

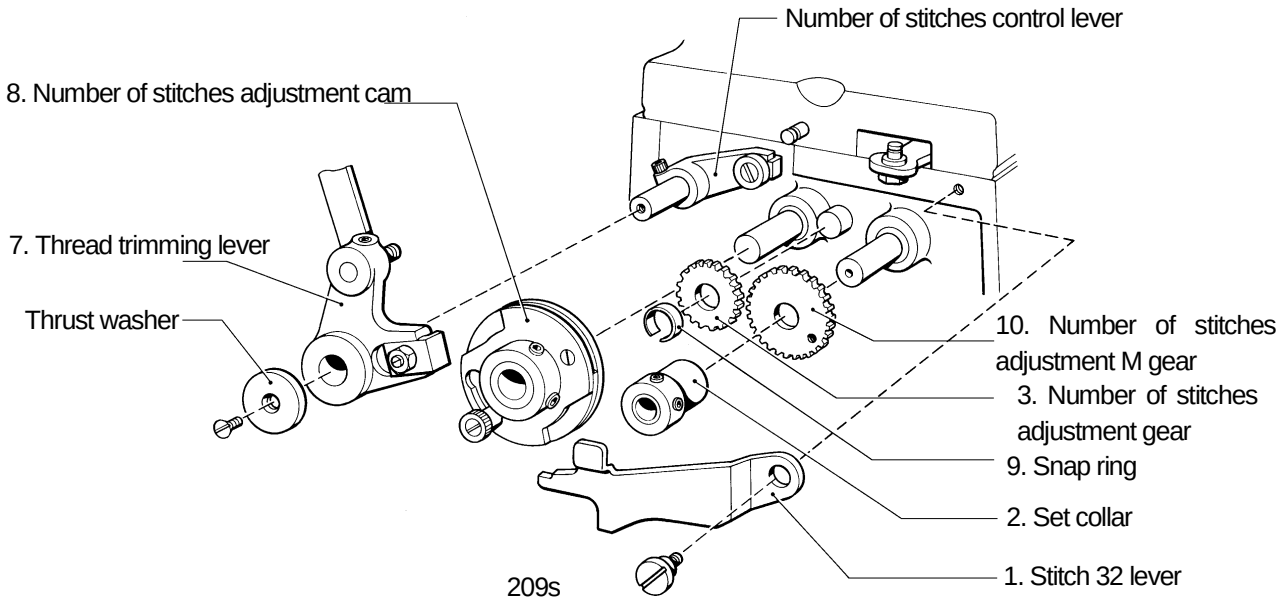

1. Feed plate
2. Needle plate
205s

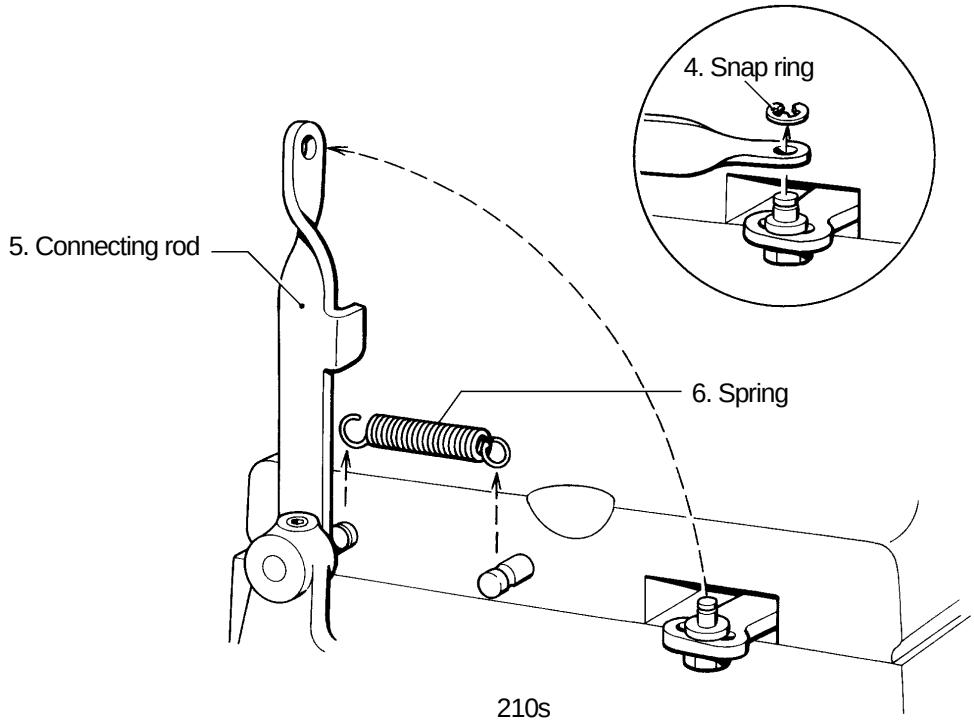

3. Loop spreader
4. Disconnecting rod
206s
[B917A]


[B917A]
5. Movable knife
6. Fixed knife
7. Needle guard
8. Loop spreader guide
9. Loop spreader base
207s


13. Loop spreader link
12. Roller
14. Loop spreader groove cam
11. Looper setting shaft
10. Looper
208s

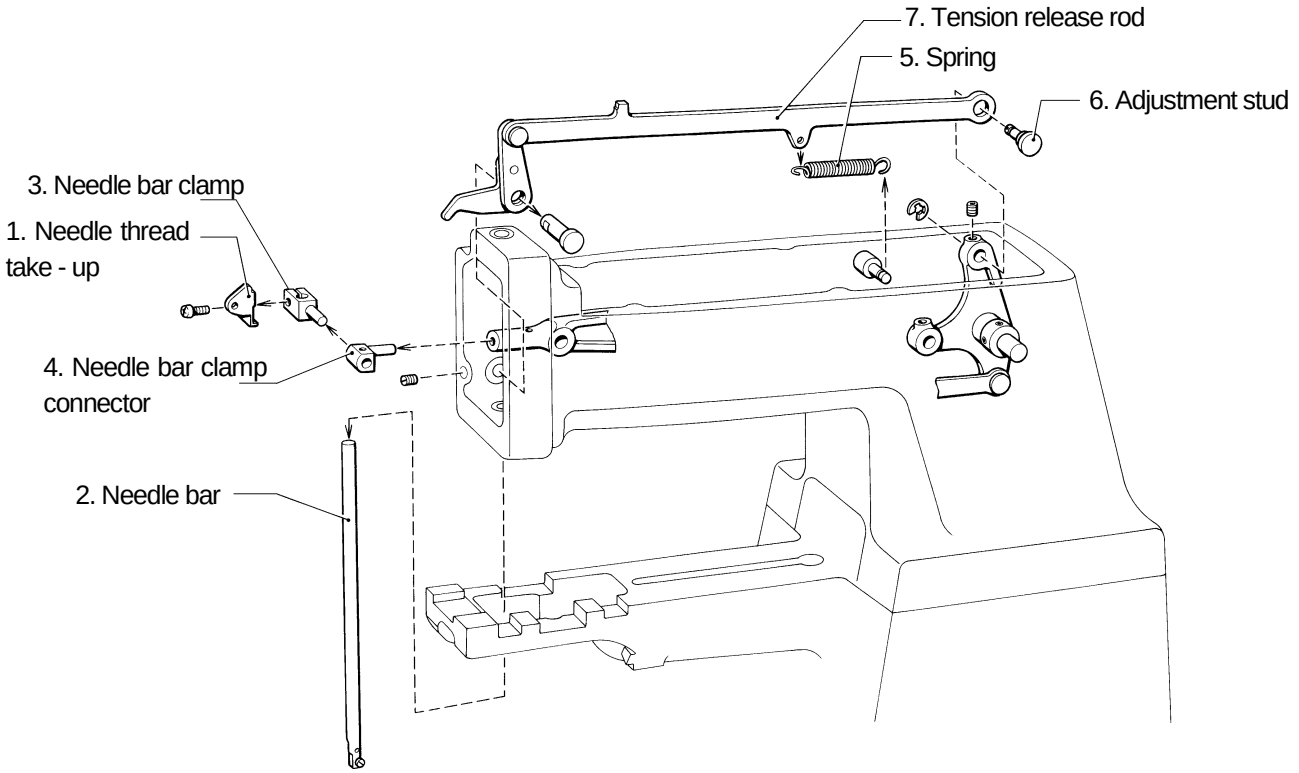
2-5. Number of stitches changing


Number of stitches control lever
8. Number of stitches adjustment cam
7. Thread trimming lever
Thrust washer
10. Number of stitches adjustment M gear
3. Number of stitches adjustment gear
9. Snap ring
2. Set collar
1. Stitch 32 lever
209s

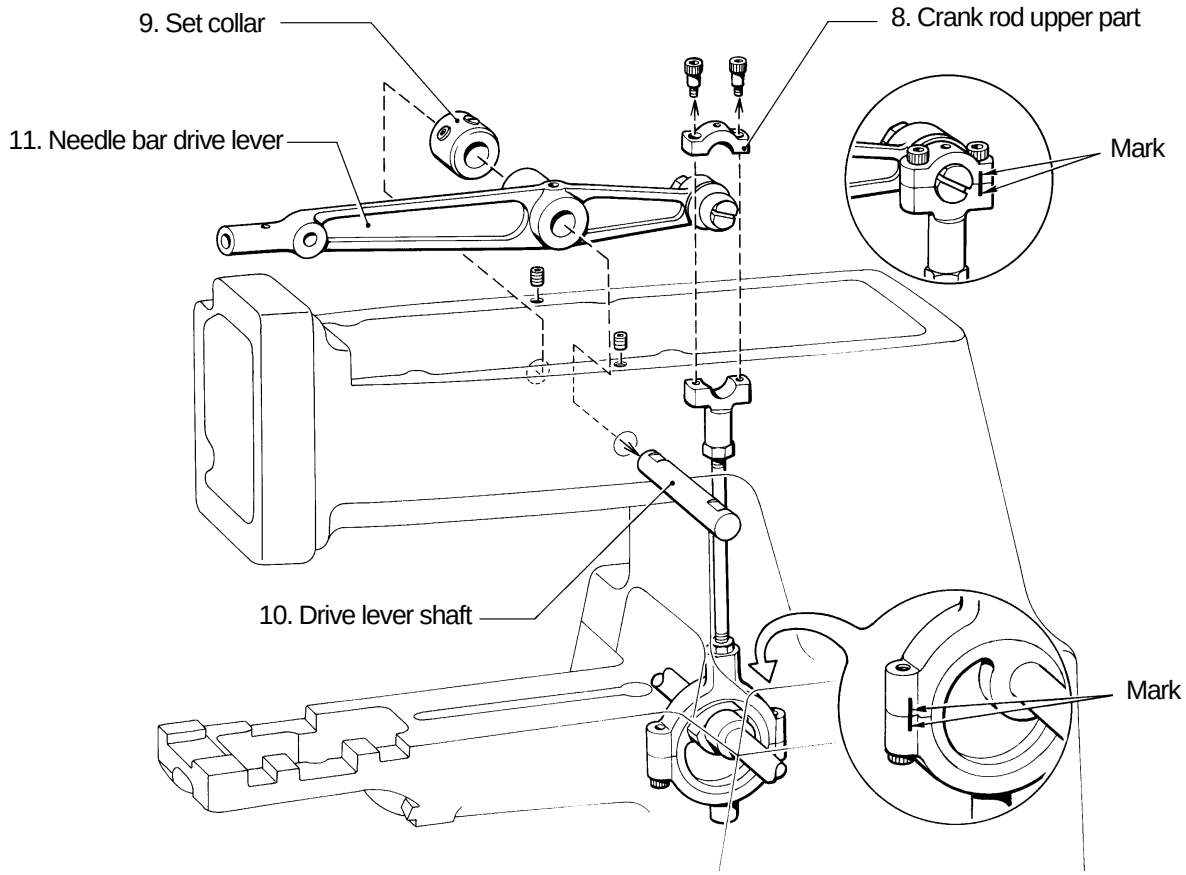


[B917A]

2-6. Needle bar



211s



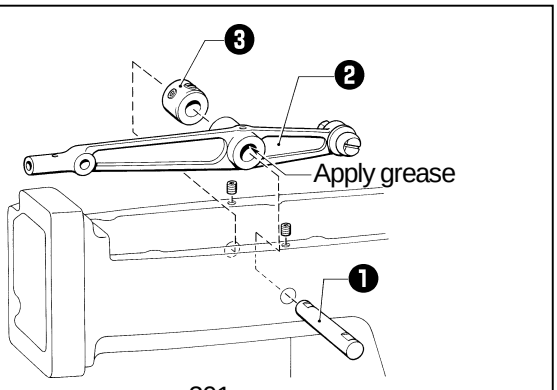
212s

3. ASSEMBLY AND ADJUSTMENT

⚠ CAUTION

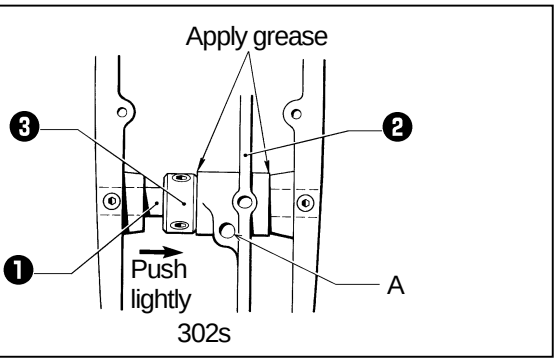
- Assembly and adjustment of the sewing machine should only be carried out by a qualified technician.
- Turn off the power switch at the following times, otherwise the machine may operate if the pedal is depressed by mistake, which could result in injury.
  * The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
  • When carrying out inspection, adjustment and maintenance
  • When replacing consumable parts such as the loopers and knife.
- If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
- Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.
  Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
  Keep the oil out of the reach of children.
- Use only the proper replacement parts as specified by Brother.
- If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.
- Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

3-1. Needle bar



301s

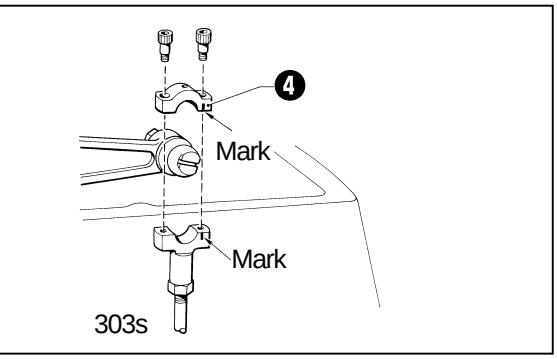
1. The screw flat of the drive shaft lever ❶ should face up and be inserted through the needle bar drive lever ❷ and set collar ❸.
2. Line up the end of the drive shaft lever ❶ with the frame and secure with the screw



302s

3. Press the set collar ❸ gently to the needle bar drive lever ❷ and tighten the screw.

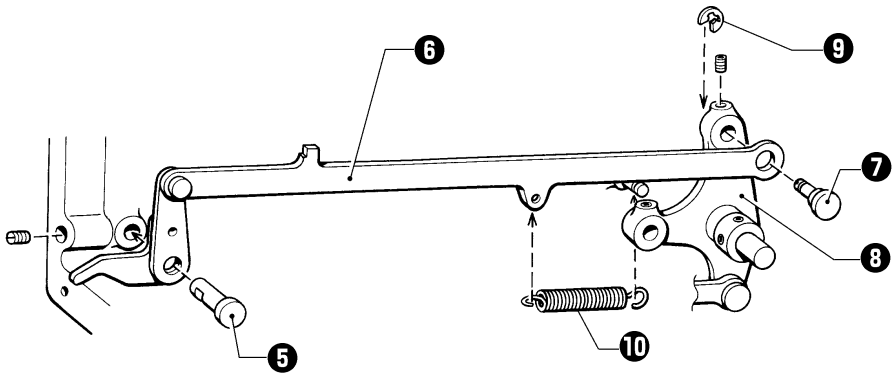
   *Make sure there is a washer put on part A of the needle bar drive lever ❷.



303s

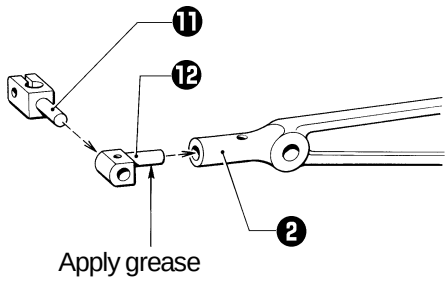
4. Line up the mark at the upper part of the crank rod ❹ and attach.

   *While turning the stop cam (pulley), tighten the screw little by little so that torque will not be excessive.



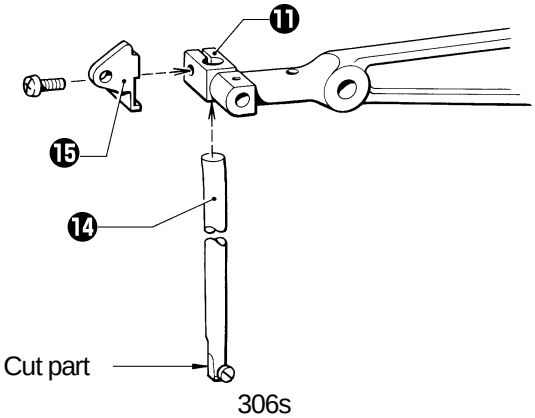
304s

5. With the screw flat of the thread take-up lever shaft ❺ facing toward you, pass it through the tension release rod ❻, insert into the frame, push lightly, and tighten the screw.
6. Pass the adjustment shaft ❼ through the tension release rod ❻ and presser driving lever ❽, and then fit the snap ring ❾ and tighten with a screw.
7. Attach the spring ❿ to the tension release rod ❻ and the frame pin.



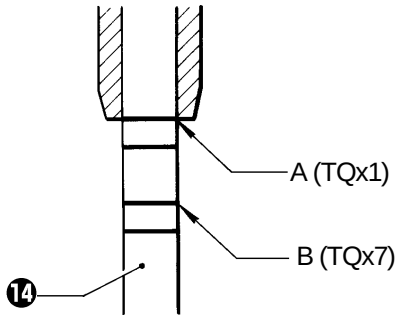
305s

8. Fit the needle bar clamp ⓫ to the needle bar clamp connector ⓬, and then fit to the needle bar drive lever ❷.



306s

9. With the cut part of the needle bar ⓮ facing toward you, pass it through the needle bar clamp ⓫, and then tighten together with the needle thread take-up ⓯.



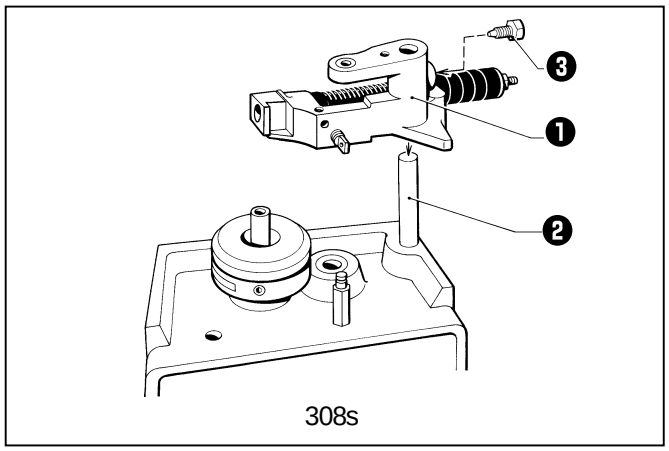
307s

< Adjustment of the needle bar height >

Move the needle bar ⓮ to the lowest position and align the uppermost reference line A with the bottom of the needle bar metal.

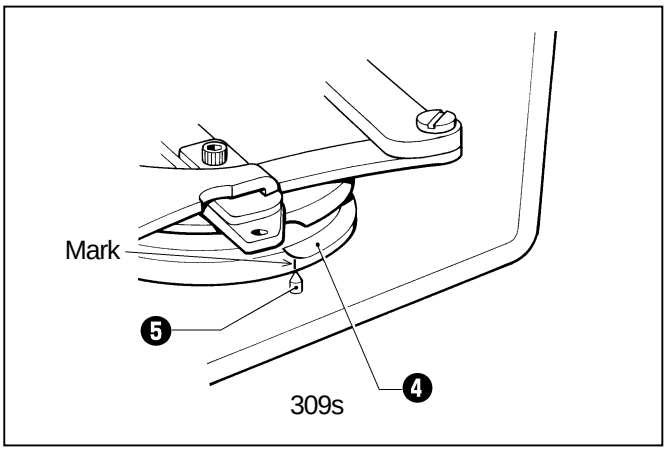
* For a TQx7 needle, use the second reference line B from the bottom.

3-2. Number of stitches changing



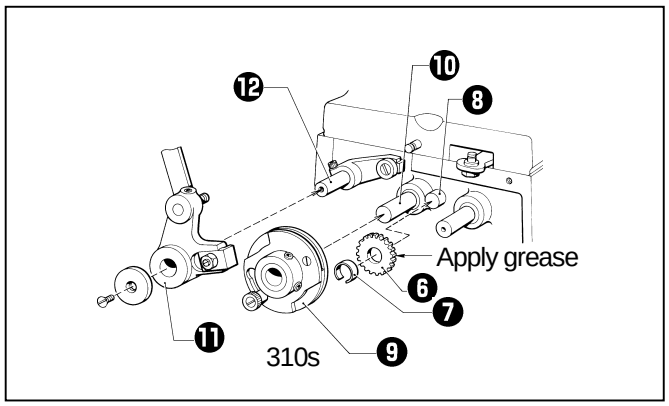
308s

1. Fit the clutch ❶ to the clutch shaft ❷ and secure with the set screw ❸.



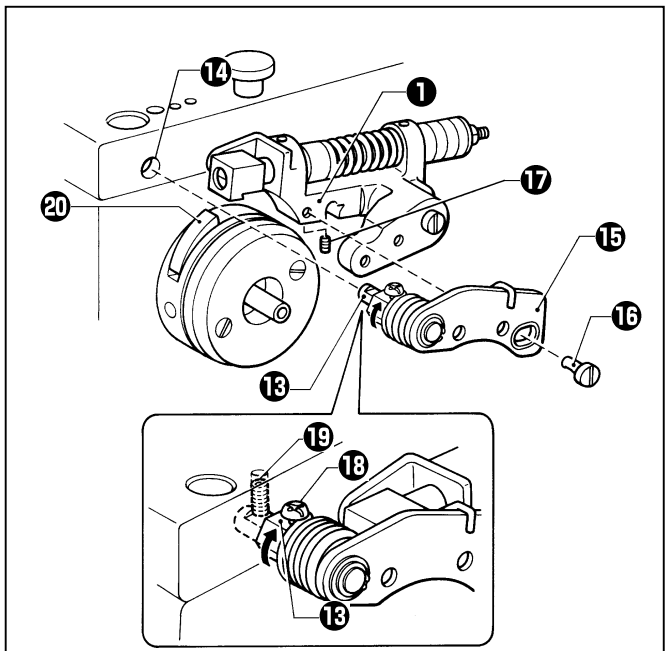
309s

2. Rotate the stop cam (pulley) and align the marking on the vertical feed cam ❹ with the cam positioning pin ❺.

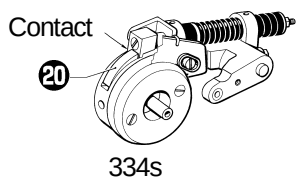


310s

3. Fit the number of stitches adjustment M-gear ❻, snap ring ❼ to the adjustment M-gear shaft ❽.
4. Fit the number of stitches adjustment cam ❾ to the cam shaft ❿.
5. Attach the thread trimmer lever ⓫ to the clutch shaft ⓬.

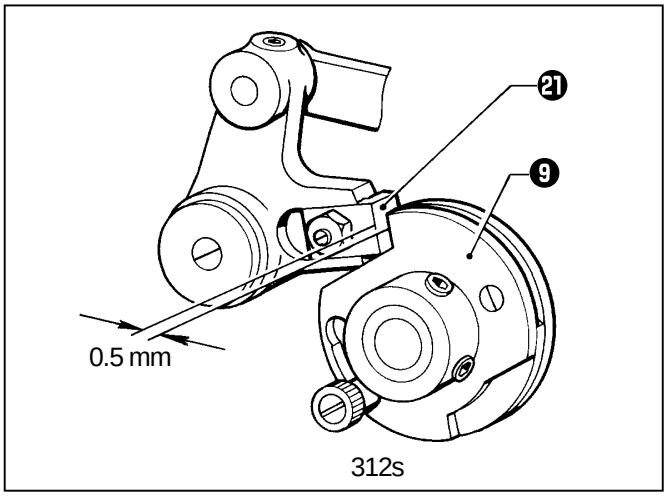


311s



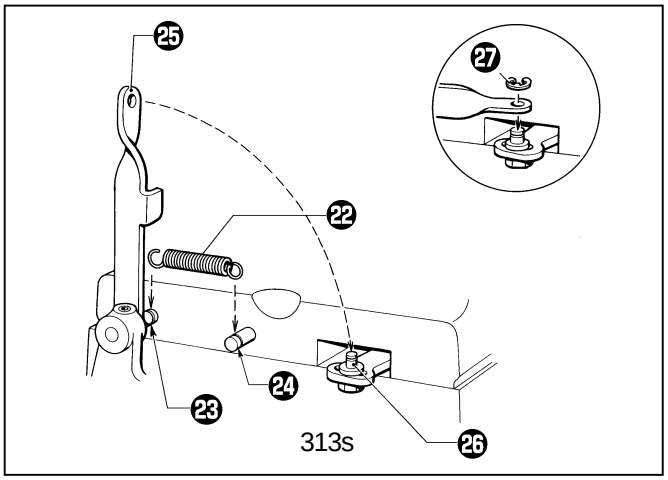
334s

6. Insert the brake shaft ⓭ into the hole ⓮ in the bed.
7. Insert the brake lever shaft ⓰ into the oval hole in the brake lever ⓯, and provisionally tighten the set screw ⓱ on the bottom side of the clutch body ❶.
8. Turn the brake shaft ⓭ until the screw ⓲ is facing upward, and then secure it by tightening the set screw ⓳.
   * Adjust the brake while referring to section Adjustment of [Brake] (P.39).
9. Contact the stop cam side ⓴ to the clutch.



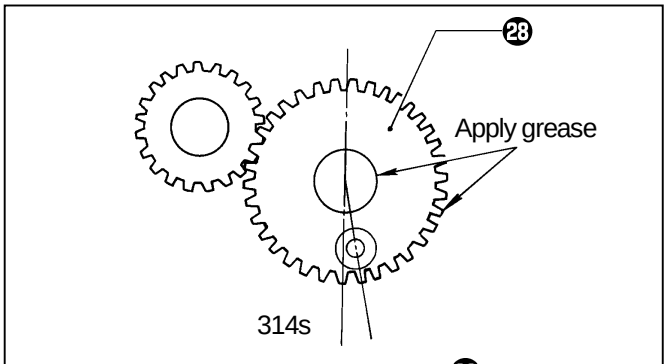
312s

10. Tighten the number of stitches adjustment cam ❾ until the clearance between it and the pawl ㉑ is 0.5 mm.



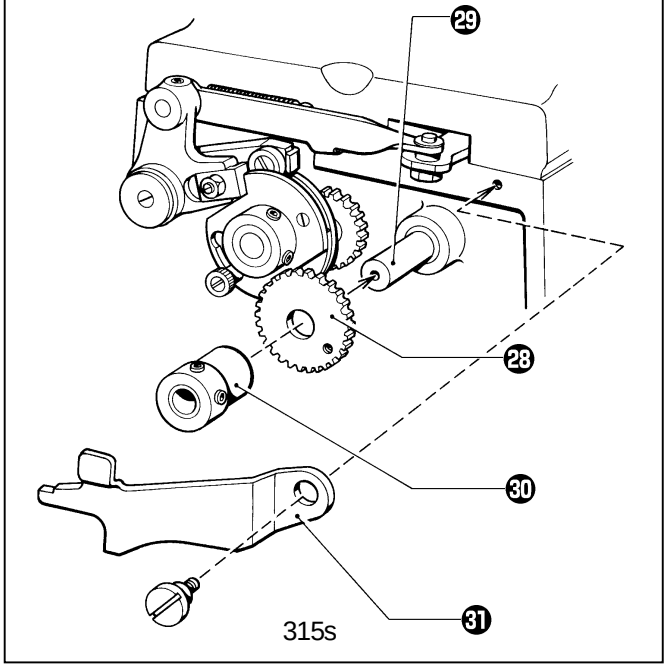
313s

11. Attach the spring ㉒ to the spring hanger ㉓ and dowel pin ㉔.
12. Fit the connecting rod ㉕ to the connecting rod shaft ㉖ and attach the ring ㉗.



314s

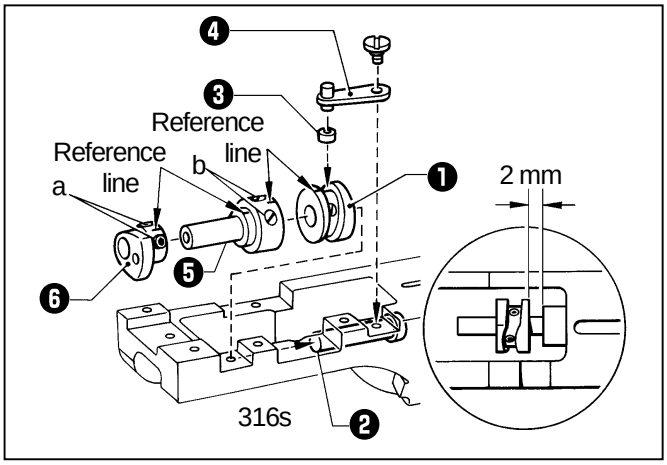
13. Move the number of stitches adjustment gear ㉘ one tooth counterclockwise from directly below and fit to the drive shaft ㉙.



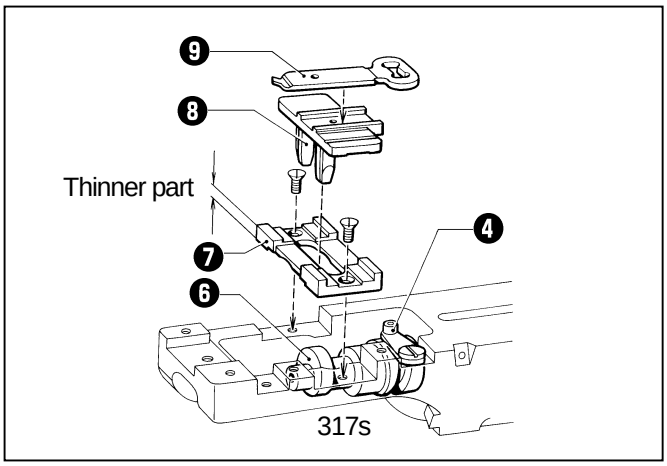
315s

14. Fit the set collar ㉚ to the drive shaft ㉙, push gently, and tighten.
15. Attach the stitch 32 lever ㉛ to the frame.

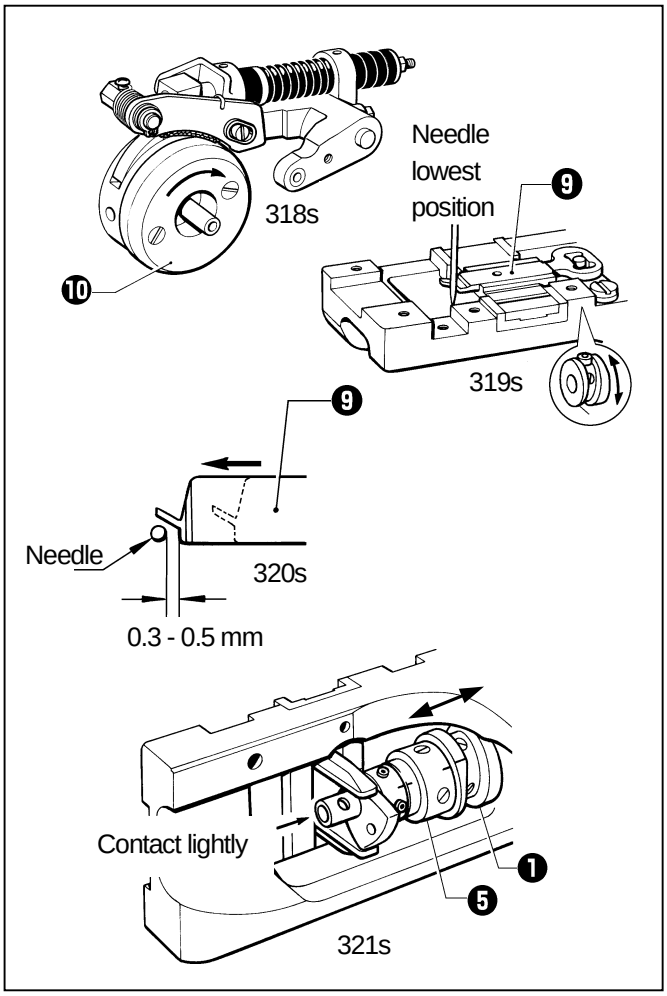
3-3. Looper



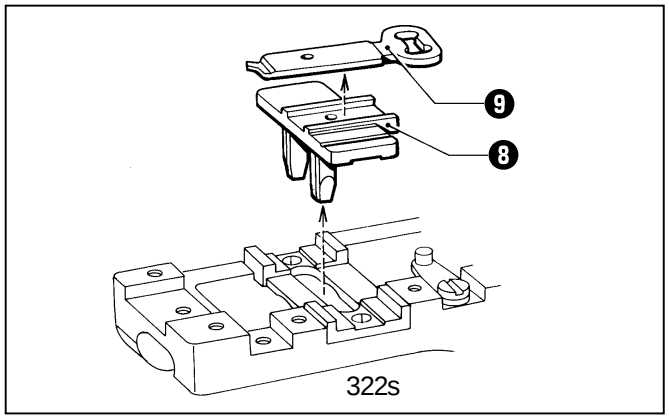
1. With the reference line of the loop spreader groove cam ❶ facing toward you and upward, fit it to the lower shaft ❷, and temporarily tighten in a position 2 mm from the metal piece.
2. Attach the loop spreader link ❹ to the roller ❸ and to the loop spreader groove cam ❶, and then install to the frame.
3. Place the thread handler triangular cam ❻ onto the looper setting shaft ❺, align the reference lines, and then tighten the two screws a .
   After this, place the looper setting shaft ❺ into the lower shaft ❷, align the grooved cam ❶ and the reference lines, and then tighten the two screws b .



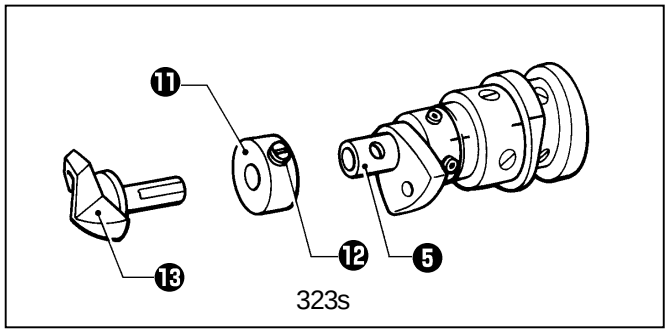
4. With the thinner side of the loop spreader base ❼ on the left side, install to the frame.
5. Fit the fork of the loop spreader guide ❽ to the triangular cam ❻.
6. Fit the loop spreader ❾ to the loop spreader guide ❽ and to the loop spreader link ❹.



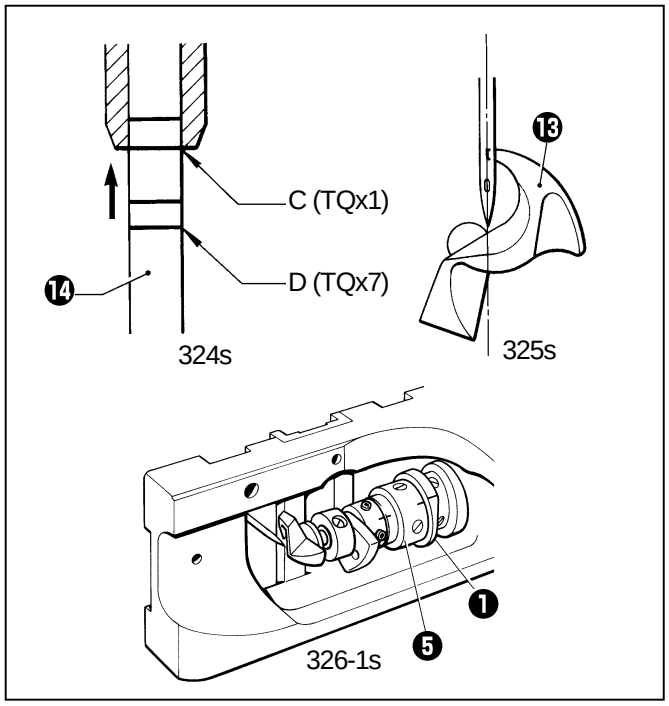
7. Install the needle.
8. Tilt the sewing machine downward.
9. Rotate the stop cam ❿ until the needle is at the lowest position, and turn the loop spreader groove cam ❶ until the loop spreader ❾ is extended farthest outward.
10. Move the loop spreader groove cam ❶ back and forth to adjust until the clearance between the loop spreader ❾ and the needle is 0.3 – 0.5 mm, and then tighten temporarily.
11. Contact the delta cam ❺ gently to the loop spreader groove cam ❶ and tighten temporarily.



12. Remove the loop spreader ❾ and the loop spreader guide ❽.



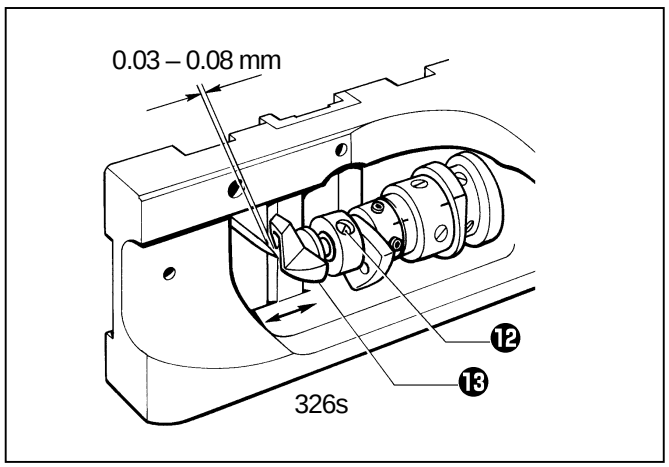
13. Place the set screw collar ⓫ onto the looper setting shaft ❺ so that the set screw ⓬ is aligned with the hole, push the looper ⓭ onto the looper setting shaft ❺ as far as it will go, and then provisionally tighten the set screw ⓬.



< Adjustment of the needle and looper >

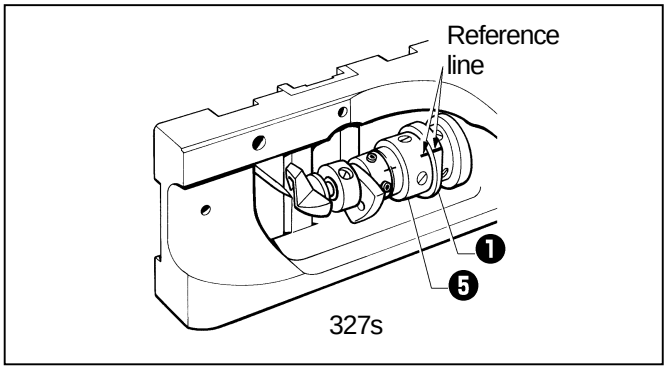
(1) Raise the needle bar ⓮ from the lowest position and align the second reference line C from the top of the needle bar with the bottom of the needle bar metal. (For a TQx7 needle, use the bottom reference line D.)

(2) Turn the looper setting shaft ❺ to adjust so that the looper ⓭ end is aligned with the needle center. Then gently contact the looper setting shaft ❺ to the loop spreader groove cam ❶ and tighten.

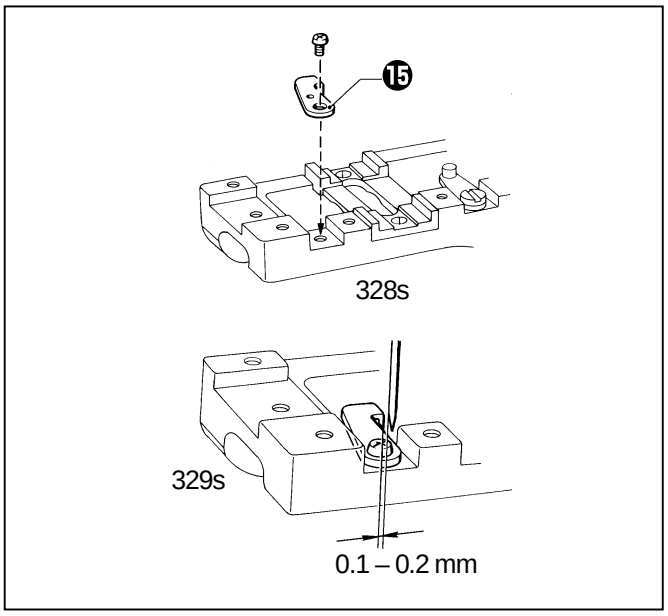


< Adjusting the clearance between the needle and the looper >

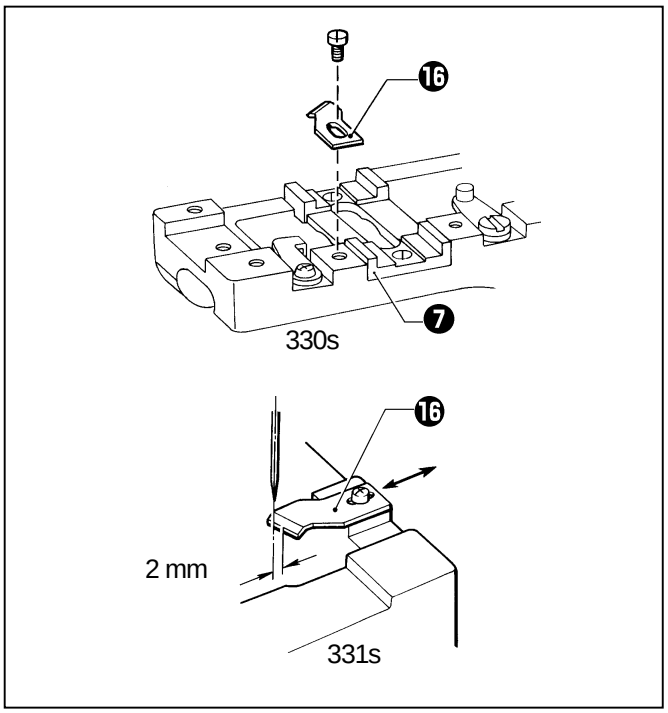
(1) Move the looper ⓭ back and forth to adjust so that the clearance between the looper ⓭ and the needle is 0.03 – 0.08 mm when the end of the looper ⓭ is aligned with the needle center.



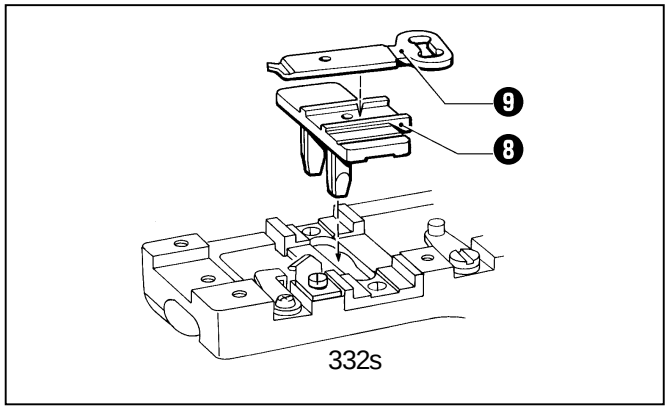
14. Align the reference line of the loop spreader groove cam ❶ with the looper setting shaft ❺, contact gently, and tighten.



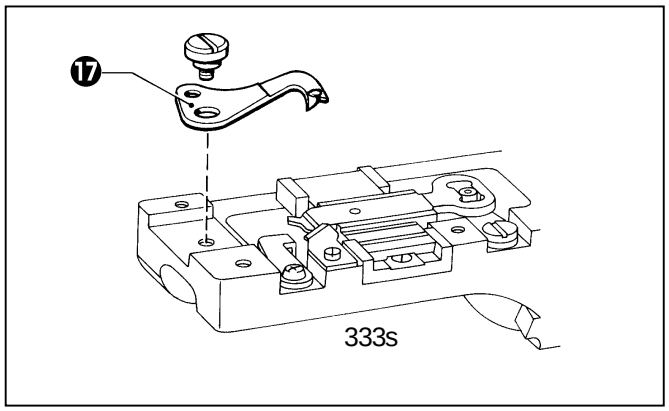
15. Attach the needle guard ⓯ to the frame and adjust so that the clearance between the needle and the needle guard ⓯ is 0.1 – 0.2 mm.



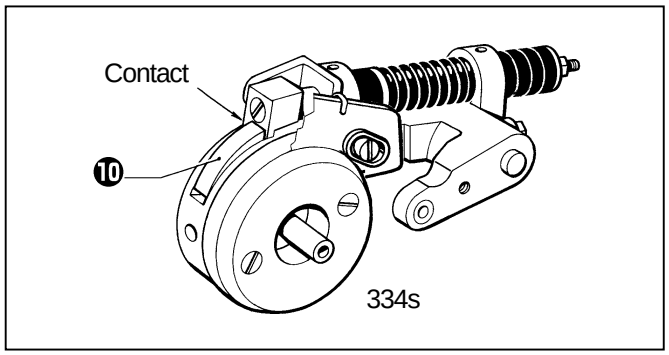
16. Contact the fixed knife ⓰ gently to the loop spreader base ❼ and attach to the frame. Adjust so that the clearance between the edge of the fixed knife ⓰ and the center of the needle is approximately.
17. Remove the needle.



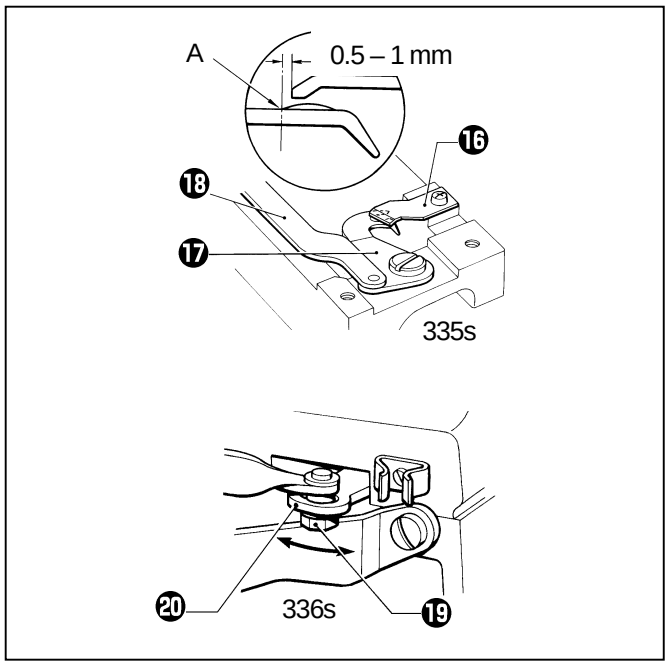
18. Fit the loop spreader guide ❽ to the loop spreader ❾.



19. Install the movable knife ⓱ to the frame

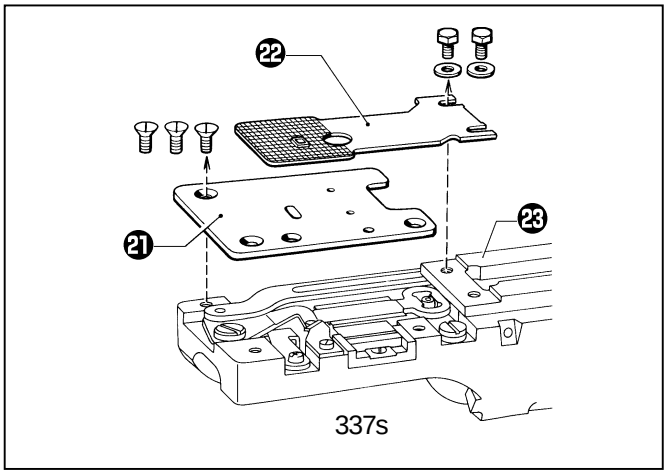


20. Rotate the stop cam ❿ to move the sewing machine to the stop position.



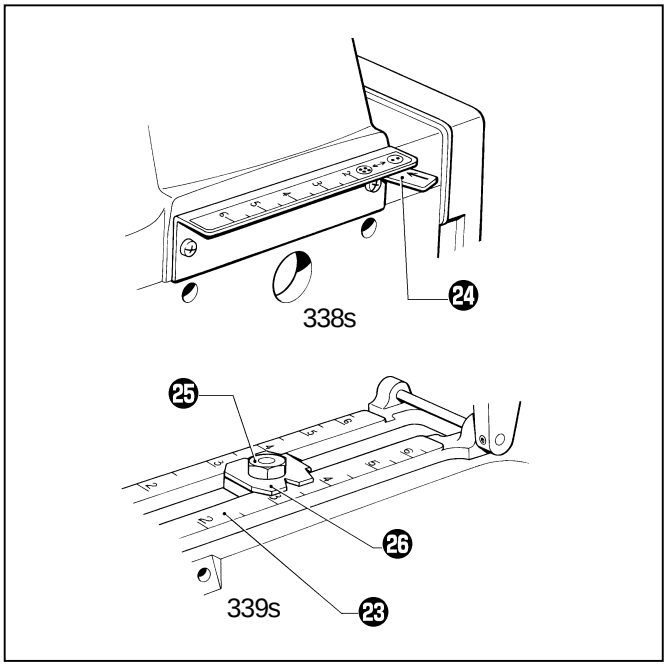
21. Fit the connecting rod ⓲ pin to the movable knife ⓱.

22. Loosen nut ⓳ and adjust, by turning the connecting lever ⓴, so that the edge of the fixed knife ⓰ is 0.5 – 1.0 mm from the projection A of the movable knife ⓱.



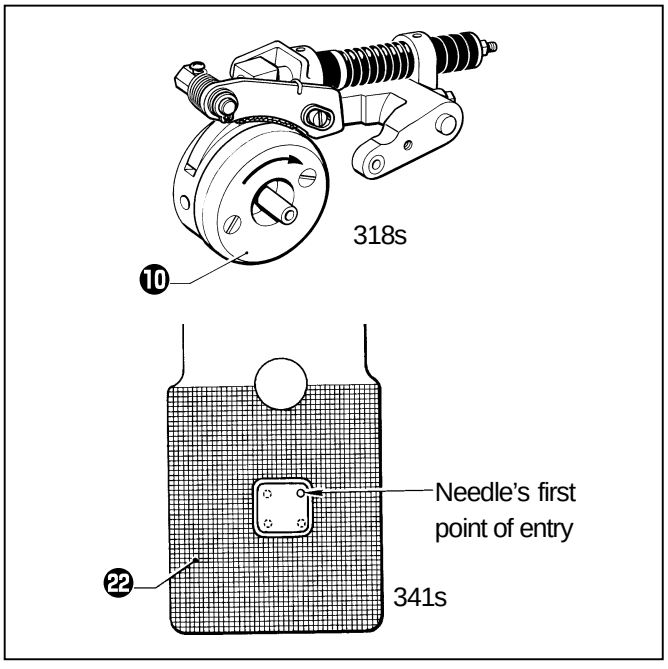
337s

23. Attach the needle plate ㉑ to the frame.
24. Temporarily attach the feed plate ㉒ to the feed bracket ㉓.



338s
339s

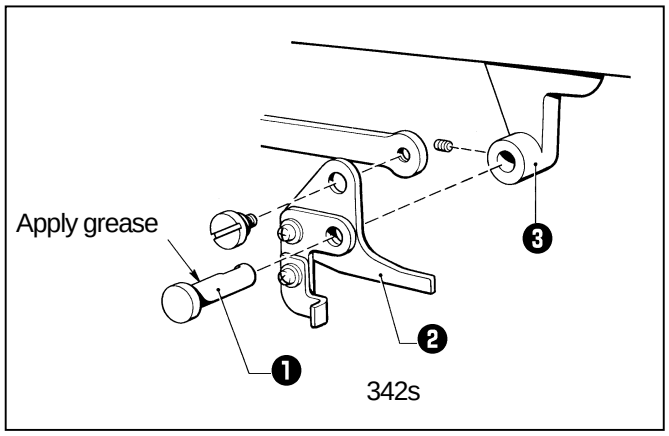
25. Put the sewing machine in the stop position, or align the arrow mark on the vertical feed adjustment lever ㉔ to the ⚇ (2 hole) position.
26. Loosen the nut ㉕ and adjust the indicator plate ㉖ to the 3.5 mark on the feed bracket ㉓.
27. Align the arrow mark on the vertical feed adjustment lever ㉔ to the 3.5 mark



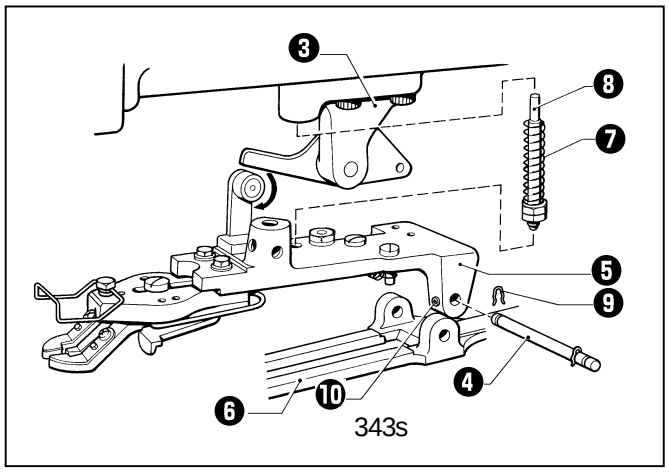
318s
341s

28. Attach the needle.
29. Rotate the stop cam ⑩ and adjust the feed plate ㉒ so that the needle will pass through at the four corners of the square hole of the feed plate ㉒ equally
30. Remove the needle.

3-4. Button clamp

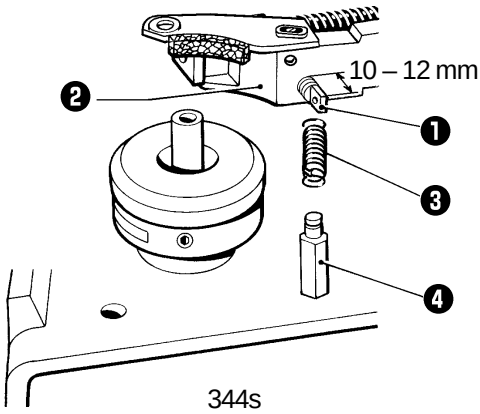


1. With the screw flat of the button clamp lifter arm shaft ❶ all the way back, pass it through the button clamp lifter arm ❷ and then attach it to the button clamp lifter bracket ❸.



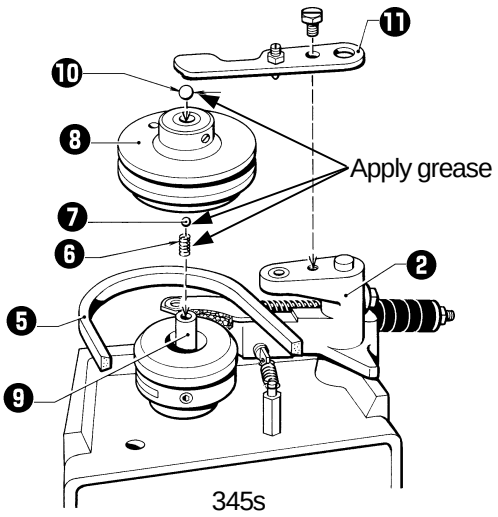
2. Install the button clamp arm ❺ to the feed bracket ❻ using the holder bar ❹. Secure the holder bar ❹ using the snap ❾ and the set screw ❿.
3. After inserting the spring ❼ and the spring guide ❽ into the button clamp lifter bracket ❸, fit to the depression in the button arm ❺.

3-5. Clutch



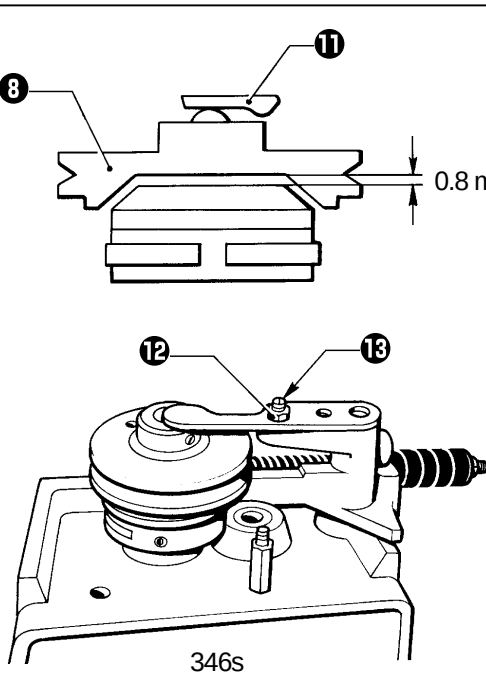
344s

1. Tilt the sewing machine downward
2. Turn the spring hanger ❶ to adjust so that the distance from the edge of the clutch ❷ is 10 – 20 mm.
3. Attach the clutch tension spring ❸ to spring hangers ❶ and ❹.



345s

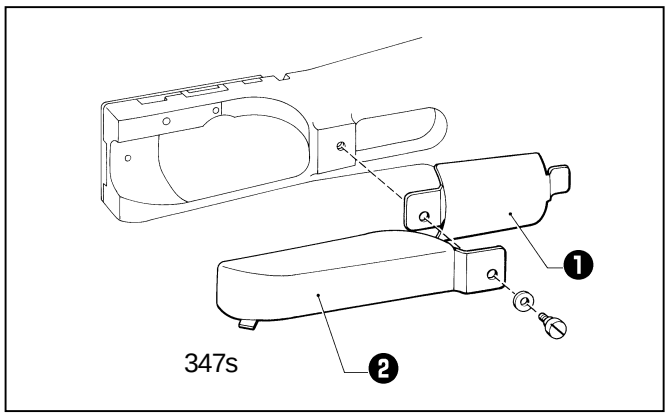
4. Attach the V-belt ❺.
5. Fit the pulley return spring ❻, the steel ball 7/32 ❼, and pulley ❽ in that order to the drive shaft ❾.
6. Place the steel ball 5/16 ❿ on top of the pulley ❽.
7. Attach the ball presser plate ⓫ to the clutch ❷.



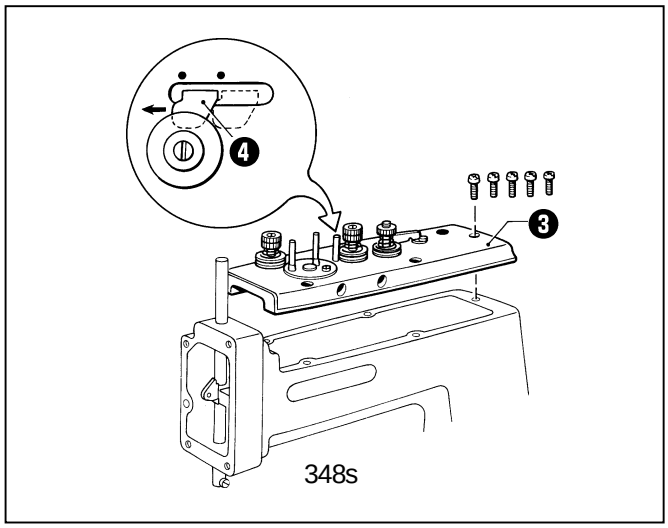
346s

8. With the sewing machine in the stop position, loosen the nut ⓬ and adjust the screw ⓭ so that there is a 0.8 mm clearance in the thrust direction of the pulley ❽.

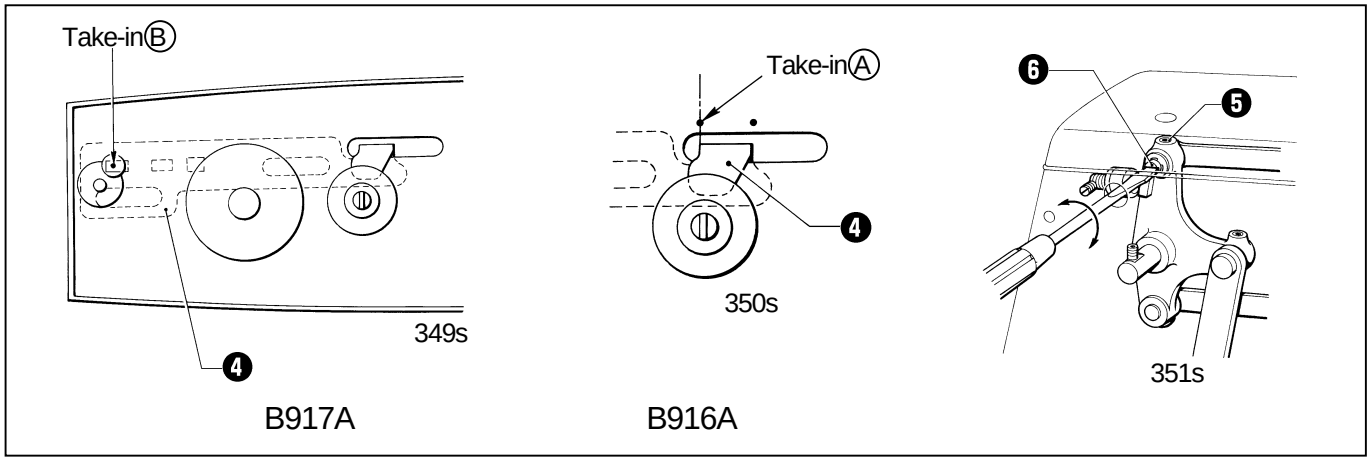
3-6. Cover



1. Attach the cover ❶ to the looper cover ❷.

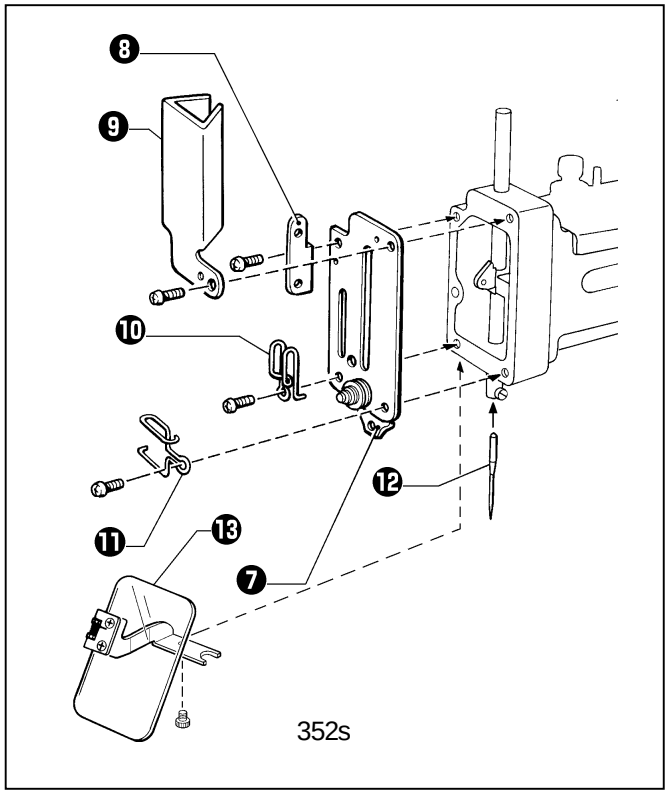


2. Attach the top cover ❸ to the frame.
   (With the top cover ❸ on the frame, it will fit well if you pull slider B ❹ toward you.)

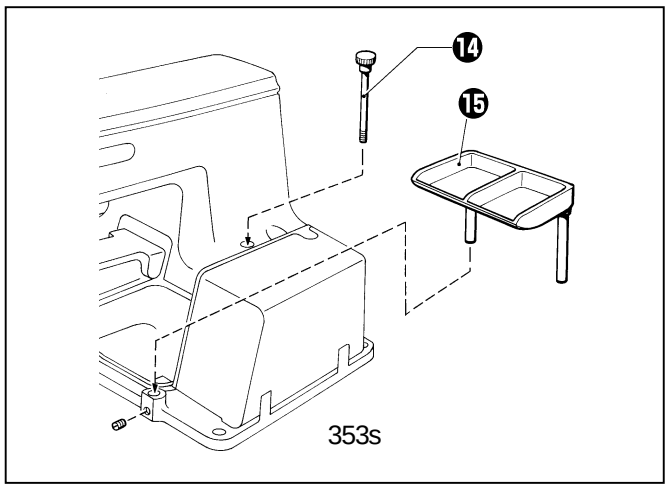


3. For B917A
   When the sewing machine is stopped and the button clamp is lifted, loosen set screw ❺, and rotate the eccentric shaft ❻ to adjust so that the take-in Ⓑ of the slider B ❹ will be at the center of the top cover.

   For B916A
   When the sewing machine is stopped and the button clamp is lifted, loosen set screw ❺, and rotate the eccentric shaft ❻ to adjust so that the end of the slider B ❹ is aligned with take-in Ⓐ.



4. Attach the face plate ❼ and the following parts to the frame.
   (Face plate thread guard ❽, needle bar cover ❾, face plate thread guide ❿, and sub-tension thread guide ⓫)
5. Attach the needle ⓬.
6. Attach the eye guard ⓭.



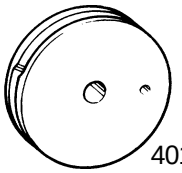
7. Attach the bolt ⓮ to the frame.
8. Attach the button tray ⓯ on either the left or right side of the machine bed table.

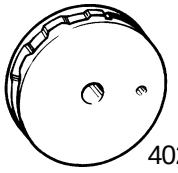
4. REPLACEMENT OF PARTS

⚠ CAUTION

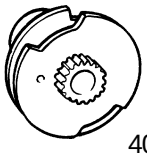
- Assembly and adjustment of the sewing machine should only be carried out by a qualified technician.
- Turn off the power switch at the following times, otherwise the machine may operate if the pedal is depressed by mistake, which could result in injury.
  * The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
  • When carrying out inspection, adjustment and maintenance
  • When replacing consumable parts such as the loopers and knife.
- If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
- Use only the proper replacement parts as specified by Brother.
- If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.
- Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

4-1.Horizontal feed cam, vertical feed cam, worm gear, worm, number of stitches adjustment cam

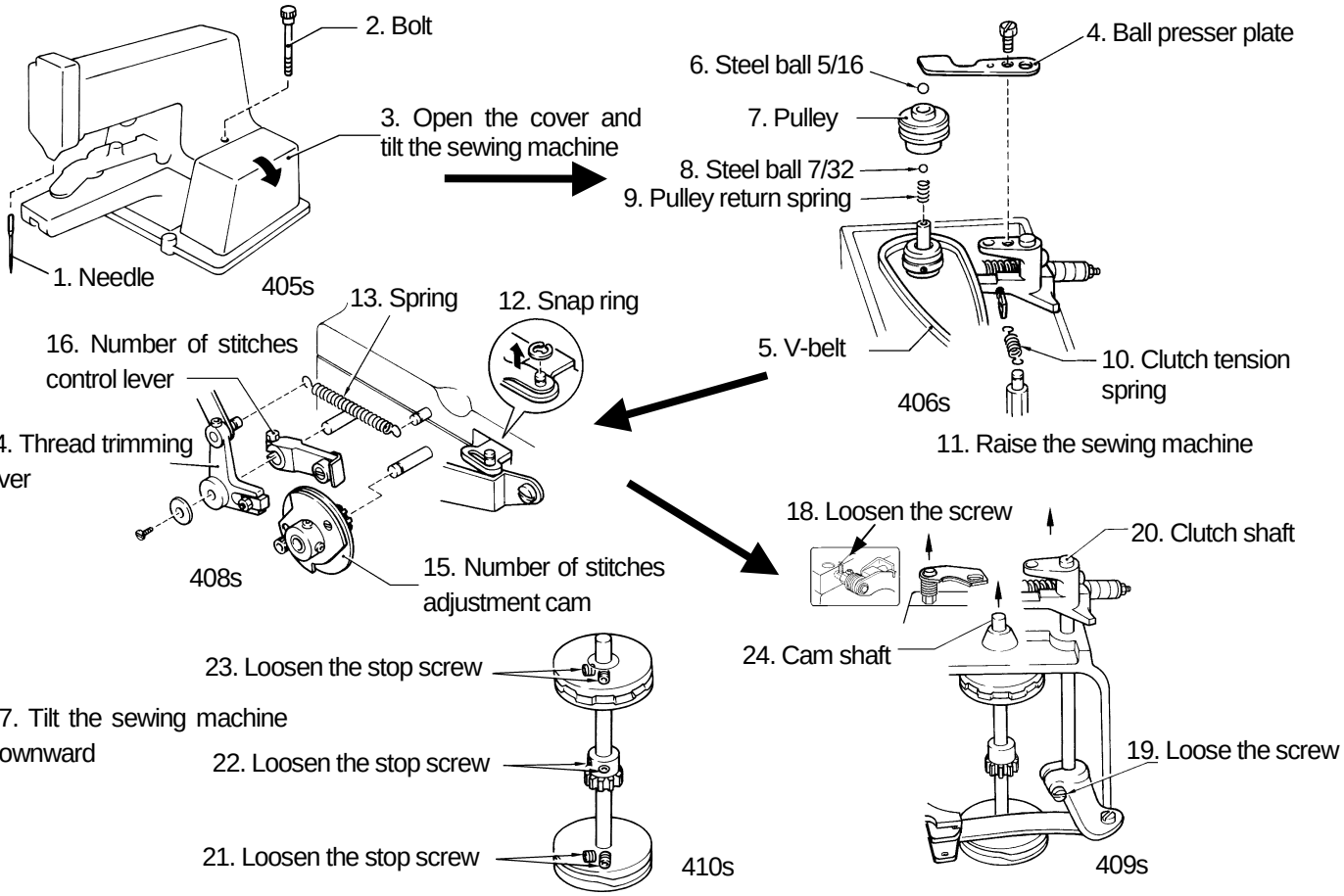

401s
Vertical feed cam

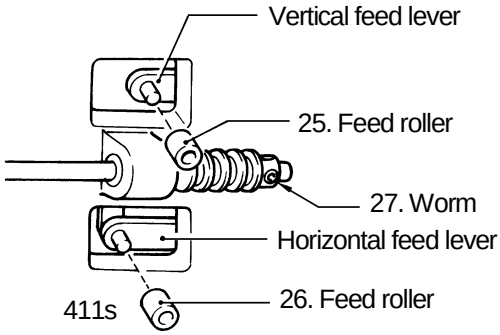

402s
Horizontal feed cam

403s
Worm gear

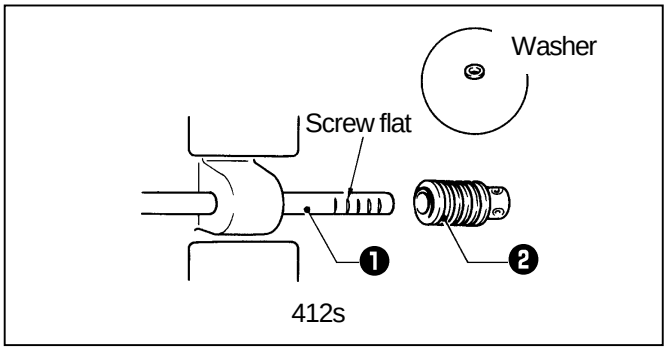

404s
Number of stitches adjustment cam

< Disassembly > Disassemble in numerical order.

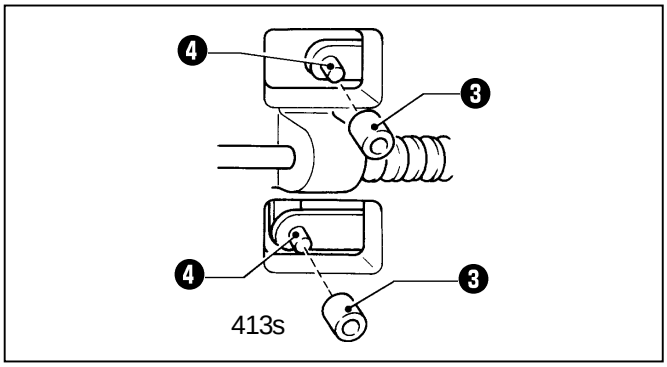




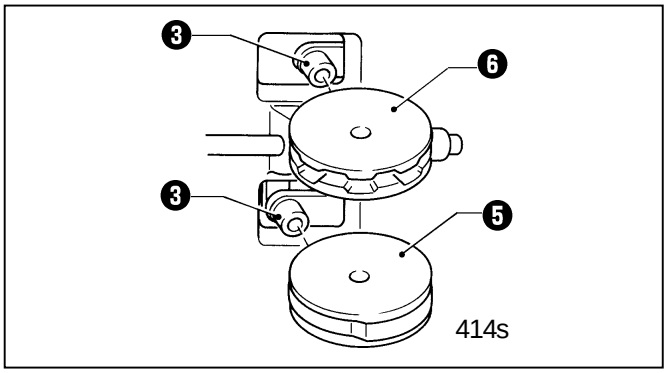
< Assembly and adjustment >



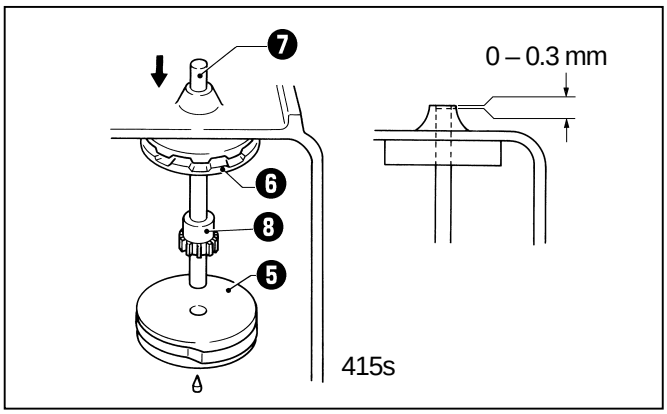
1. The screw flat of the lower shaft ❶ should be facing straight downward and the worm ❷ tightened temporarily.
   (Remove the washer. After making the adjustment, remove the stop screw from the screw flat, insert it in the threaded part, and tighten the stop screw.)



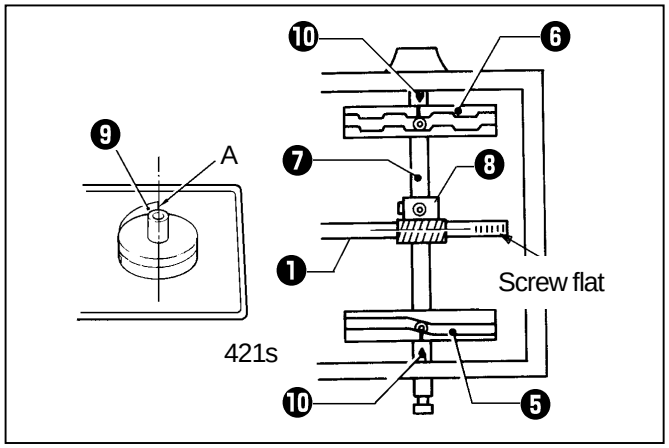
2. Fit the feed roller ❸ to the feed roller shaft ❹.



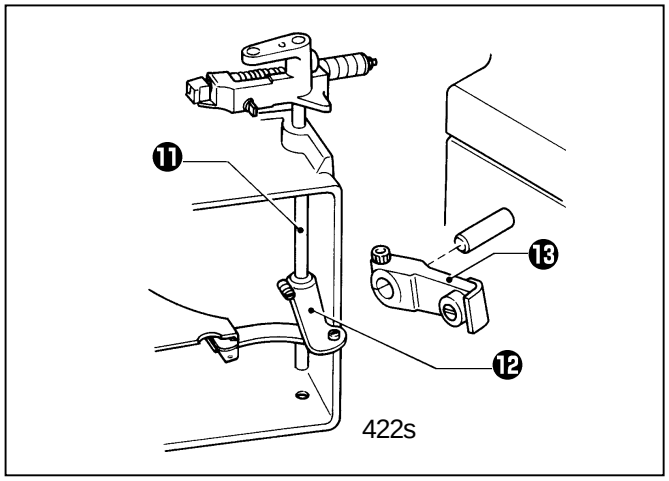
3. Fit the vertical feed cam ❺ and the horizontal feed cam ❻ to the feed roller ❸.



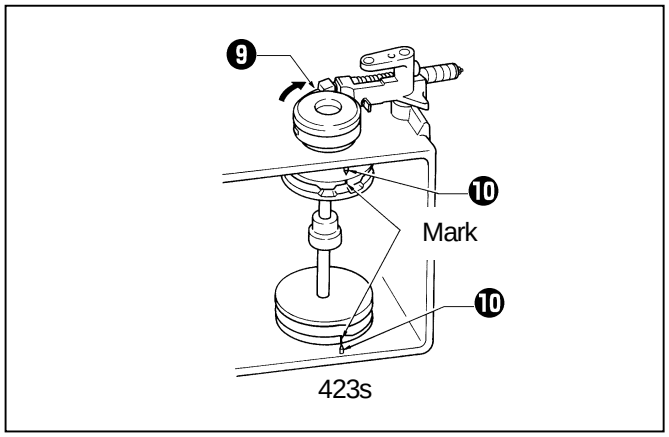
4. Pass the cam shaft ❼ through the horizontal feed cam ❻, the worm gear ❽, and the vertical feed cam ❺.
5. Insert the cam shaft ❼ to a depth of 0 – 0.3 mm from the frame surface.



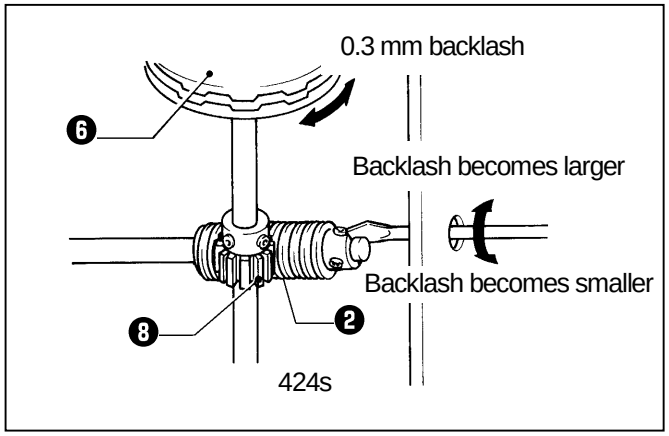
6. Place end A of the stop cam side ❾ in a vertical position and align the take-in of feed cams ❺ and ❻ with the cam positioning pin ⑩. Tighten the stop screw at the side of direction of rotation to the screw flat of the cam shaft ❼. The screw flat of the rotating hook shaft ❶ should face straight down at this time.
   *Eliminate the backlash in the thrust direction of the cam shaft ❼ by adjusting feed cams ❺ and ❻.
   *Align the center of the worm gear ❽ with the center of the rotating shaft ❶.



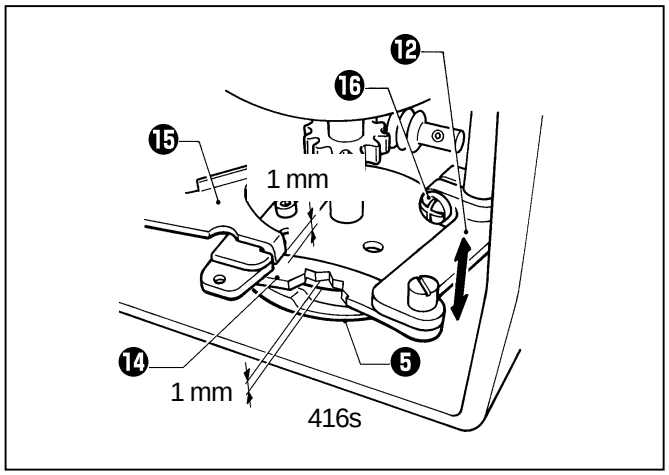
7. Insert the clutch shaft ⑪, fit the button clamp driving lever ⑫ and the number of stitches control lever ⑬, and eliminate the backlash of the clutch shaft ⑪ by adjusting the number of stitches control lever ⑬.



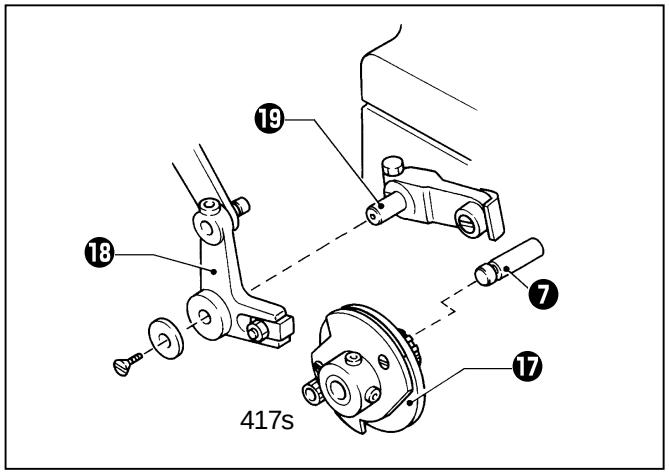
8. Move the sewing machine to the stop position.
   The mark of the feed cam should align with the cam positioning pin ⑩ when the stop cam side ❾ contacts the head of the clutch.



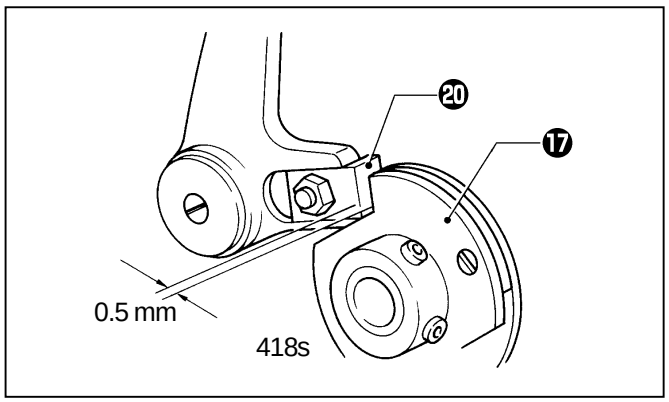
9. By loosening the worm ❷, and turning the worm ❷ with a screwdriver, adjust so that the backlash of the worm ❷ and worm gear ❽ becomes 0.3 mm at the feed cam ❻.



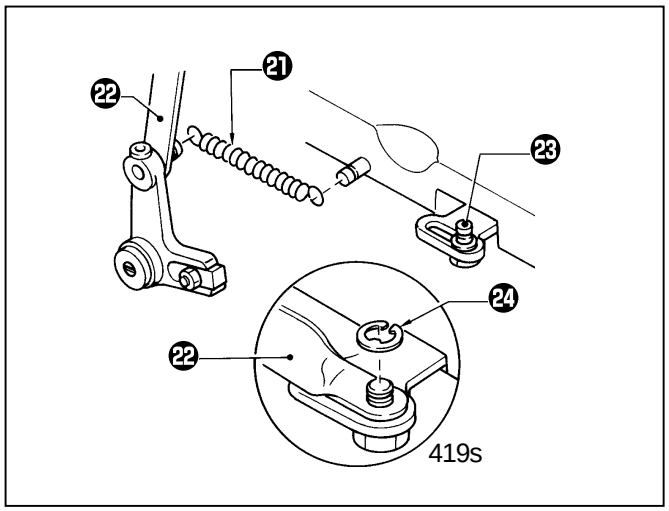
10. Tighten the button clamp driving lever ⓬ temporarily so that the clearance between the button clamp driving fork ⓯ and the driving link ⓮, and between the driving link ⓮ and the vertical feed cam ⓹, is 1 mm.
11. Loosen the screw ⓰ and adjust the button clamp driving lever ⓬.



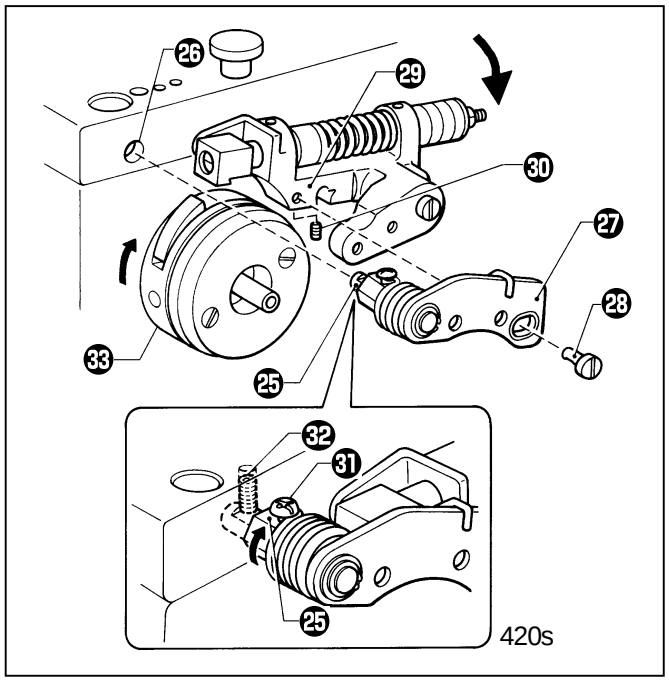
12. Raise the sewing machine.
13. Fit the number of stitches adjustment cam ⓱ to the cam shaft ⓹.
14. Temporarily tighten the thread trimming lever ⓲ to the clutch shaft ⓳.



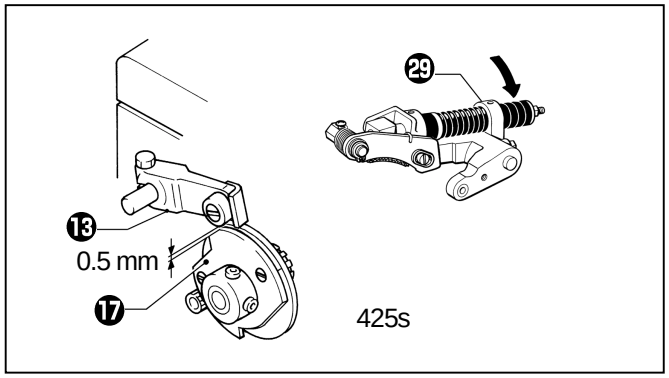
15. Adjust the number of stitches adjustment cam ⓱ so that there is a clearance of 0.5 mm between it and the pawl ⓴.



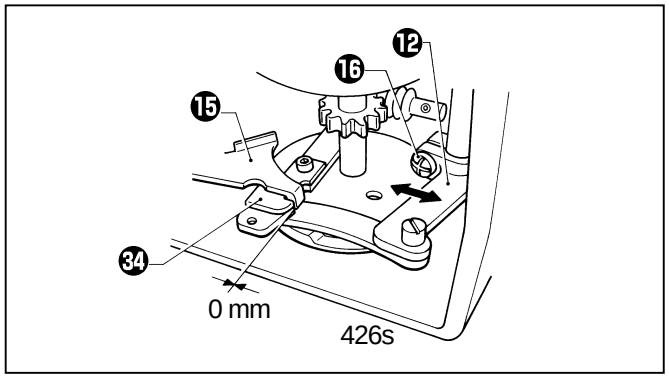
16. Attach the spring ㉑.
17. Fit the connecting rod ㉒ to the connecting rod shaft ㉓, and then fit the snap ring ㉔.



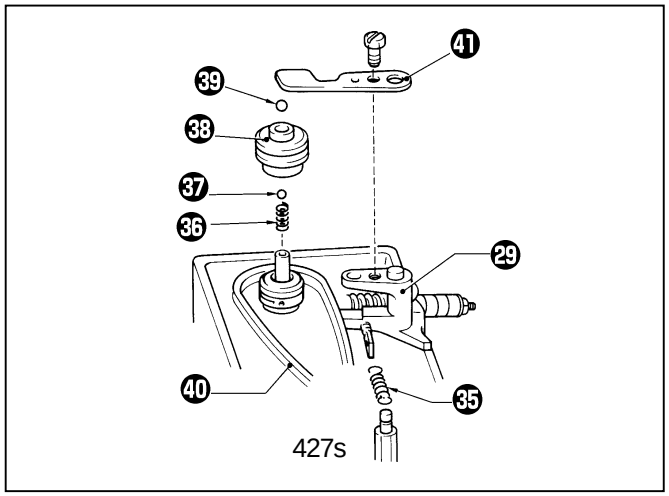
18. Insert the brake shaft ㉕ into the hole ㉖ in the bed.
19. Insert the brake lever shaft ㉘ into the oval hole in the brake lever ㉗, and provisionally tighten the set screw ㉚ on the bottom side of the clutch body ㉙.
20. Turn the brake shaft ㉕ until the screw ㉛ is facing upward, and then secure it by tightening the set screw ㉜.
    * Adjust the brake while referring to section Adjustment of [Brake] (P.39).
21. With the rear part of the clutch ㉙ pressed, start the sewing machine by rotating the stop cam ㉝ two or three times.



22. With the rear part of the clutch ㉙ pressed, adjust the stitch length control lever ⑬ so that the clearance between the stitch length control lever ⑬ and the stitch length adjustment cam ⑰ is 0.5 mm.



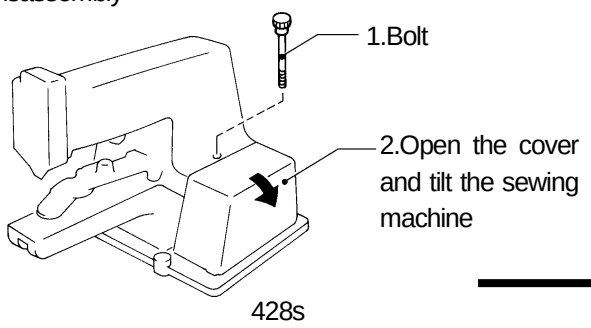
23. Tilt the sewing machine downward.
24. After stopping the machine, loosen the screw ⑯. Then move the button clamp driving lever ⑫ to adjust so that the end of the button clamp driving fork ⑮ and the end of the driving rod claw ㉞ are aligned. After adjustment is completed, tighten the screw ⑯.

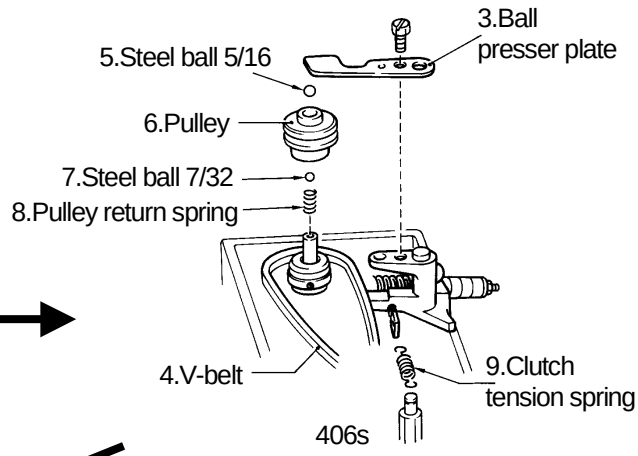


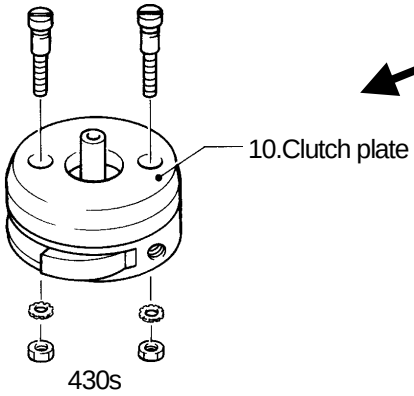
25. Attach the clutch tension spring ㉟.
26. Fit the pulley return spring ㊱, the steel ball 7/32 ㊲, the pulley ㊳, the steel ball 5/16 ㊴ and the belt ㊵, and then attach the ball presser plate ㊶ to the clutch ㉙.
27. Raise the sewing machine.
28. Attach the needle and installation bolt.

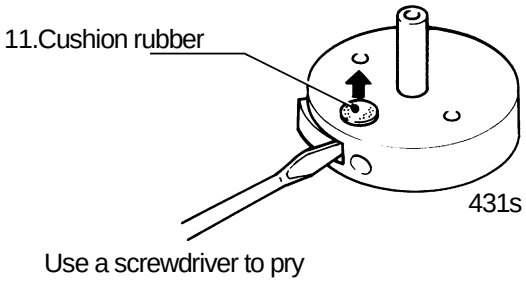
4-2.Cushion rubber

< Disassembly >

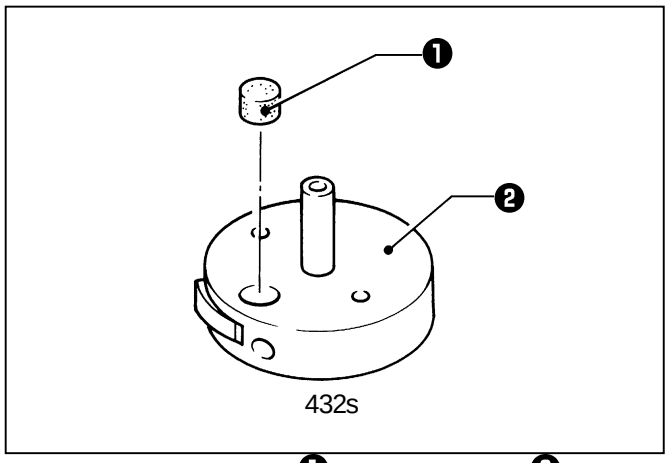




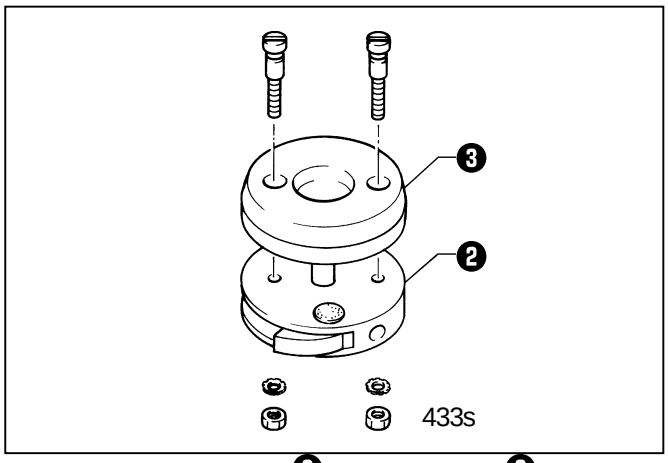




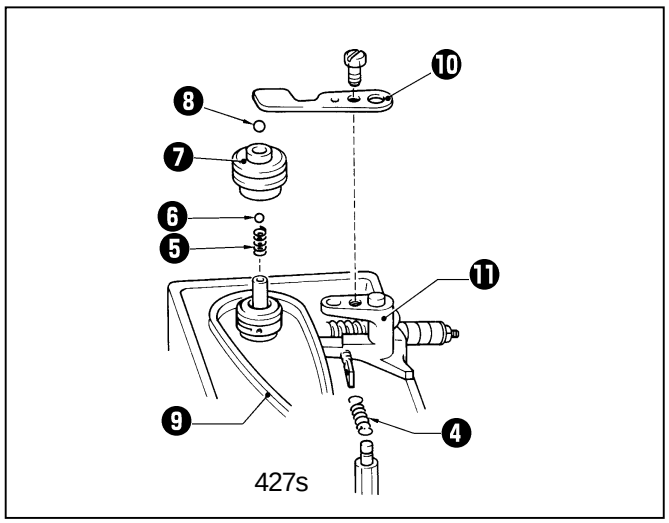
< Assembly >



1. Tap the cushion rubber ❶ into the stop cam ❷.



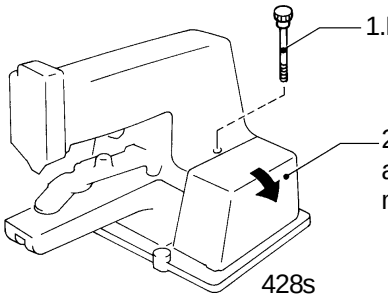
2. Attach the clutch plate ❸ to the stop cam ❷.

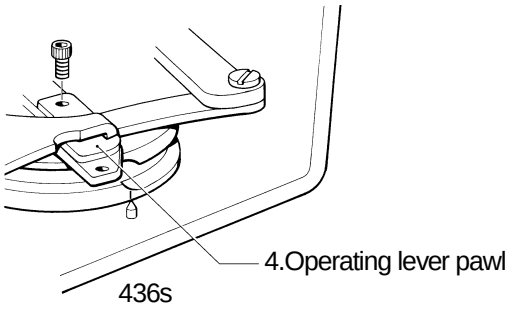


3. Attach the clutch tension spring ❹.
4. Install the pulley return spring ❺, the steel ball 7/32 ❻, the pulley ❼, the steel ball 5/16 ❽, and the belt ❾, and install the ball presser plate ❿ to the clutch ⓫.
5. Raise the sewing machine.
6. Attach the installation bolt.

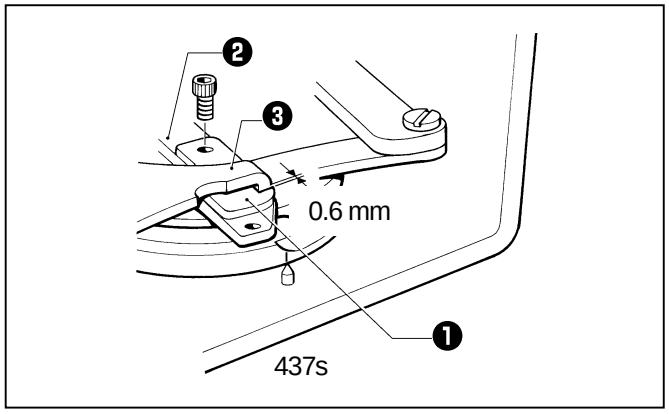
4-3.Operating lever pawl

< Disassembly >





< Assembly >



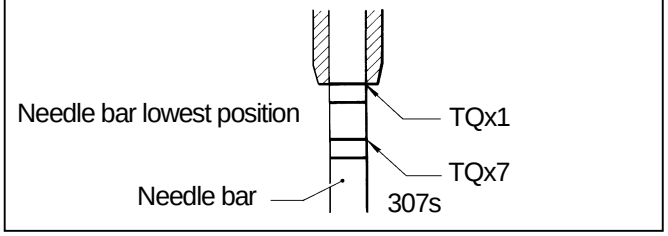
1. Attach the operating lever pawl ❶ to the connecting rod assembly ❷.
   With the sewing machine in the start condition, install so that there is a clearance of 0.5 mm for the operating lever pawl ❶ and the button clamp operating fork ❸.
2. Raise the sewing machine.
3. Attach the bolt.

5. ADJUSTMENT

⚠ CAUTION

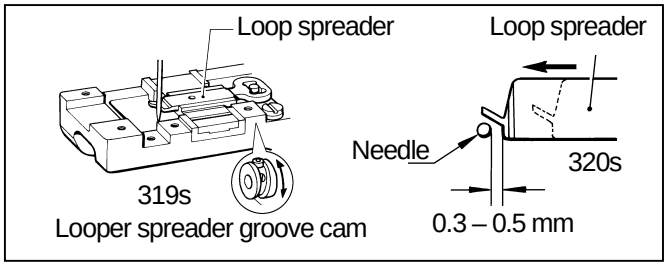
- Assembly and adjustment of the sewing machine should only be carried out by a qualified technician.
- Turn off the power switch at the following times, otherwise the machine may operate if the pedal is depressed by mistake, which could result in injury.
  * The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
  - When carrying out inspection, adjustment and maintenance
  - When replacing consumable parts such as the loopers and knife.
- If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
- Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.
  Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
  Keep the oil out of the reach of children.
- Use only the proper replacement parts as specified by Brother.
- If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.
- Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

5-1.Needle bar height



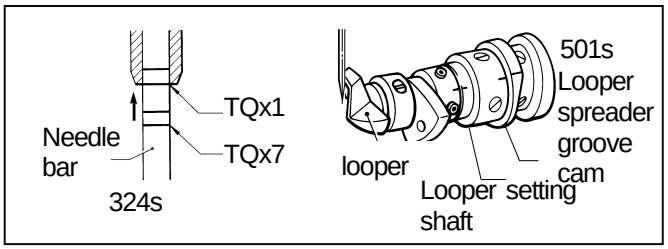
With the needle bar at the lowest position, align the reference line of the needle bar with the lower edge of the needle bar metal.

5-2.Loop spreader



Move the needle to its lowest position by rotating the pulley. When the loop spreader has been advanced to its closest point to you by turning the looper spreader groove cam, adjust the clearance between the needle to 0.3 – 0.5 mm by moving the loop spreader groove cam backward and forward.

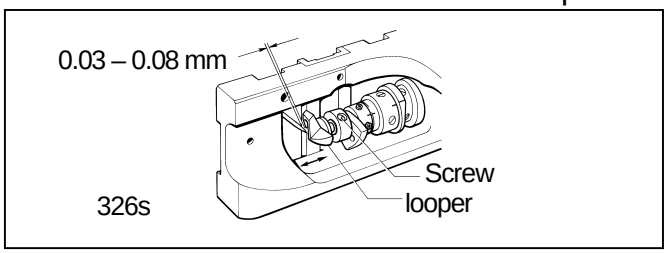
5-3.Point where needle and looper meet



Raise the needle bar from the lowest position until it is aligned with the needle bar metal. Adjust the tip of the looper so that it is at the center of the needle by using the Looper setting shaft.

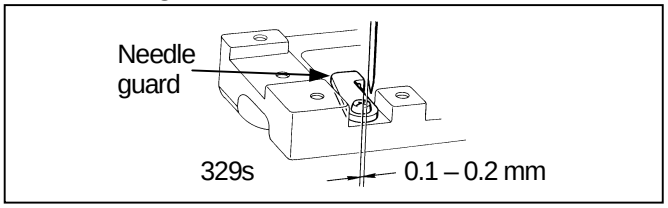
* Set the delta cam lightly against the looper spreader groove cam.

5-4.Clearance between needle bar and looper



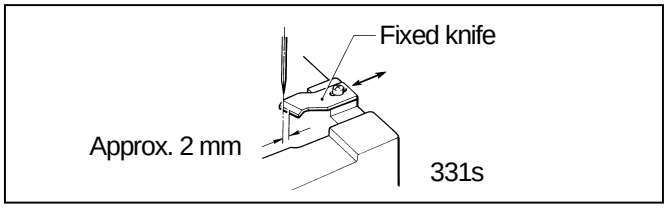
When the tip of the looper is aligned with the center of the needle, the clearance between the looper and the needle should be 0.03 – 0.08 mm.

5-5.Needle guard



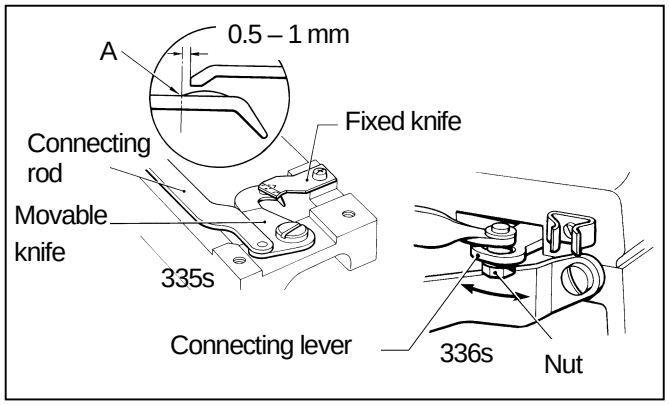
The clearance between the needle and the needle guard should be 0.1 – 0.2 mm.

5-6.Fixed knife



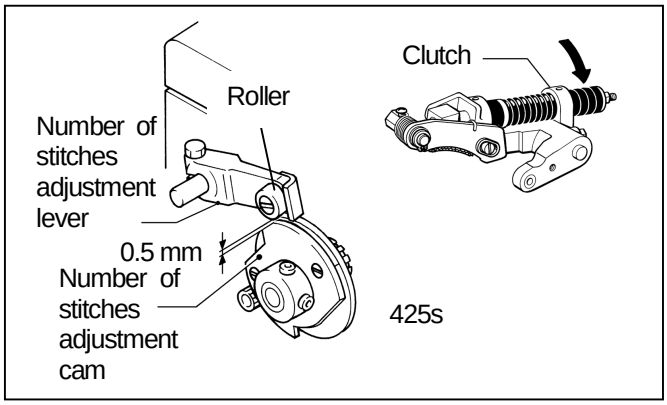
The distance between the blade edge of the fixed knife and the center of the needle should be approximately 2 mm.

5-7.Movable knife



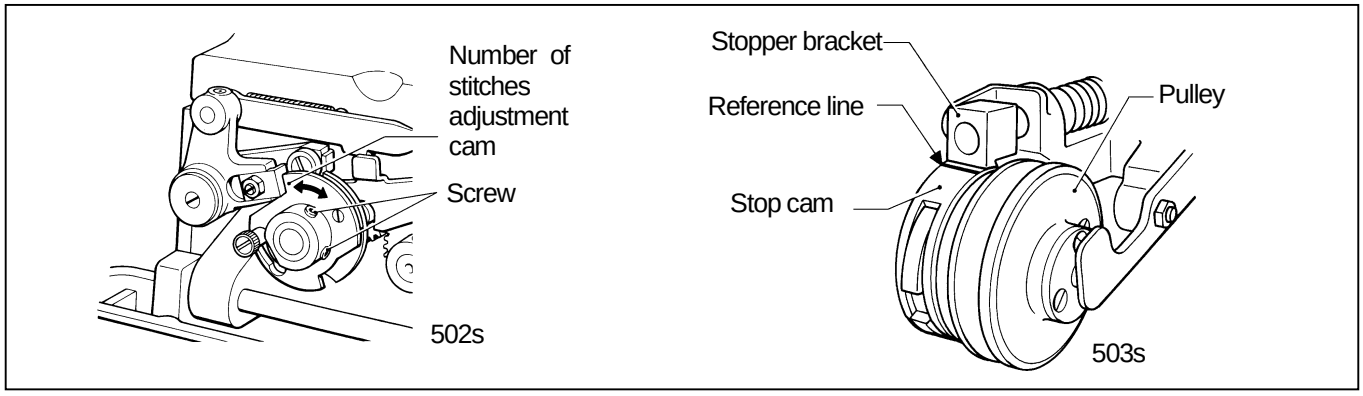
Adjust the connecting rod so the boss A on the movable knife extends 0.5 – 1 mm from the fixed knife.

5-8.Number of stitches control lever



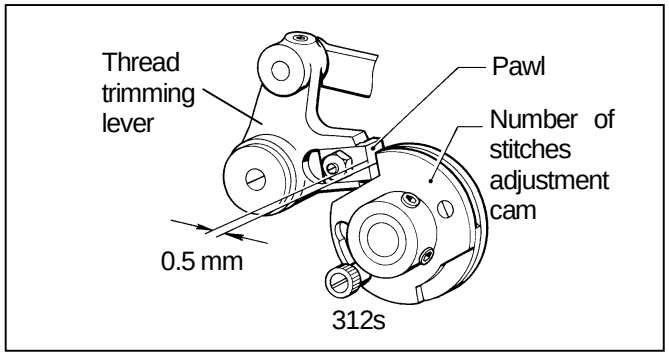
Start the sewing machine by pressing the rear part of the clutch. The clearance between the pawl and the number of stitches adjustment cam should be 0.5 mm.

5-9.Number of stitches adjustment cam



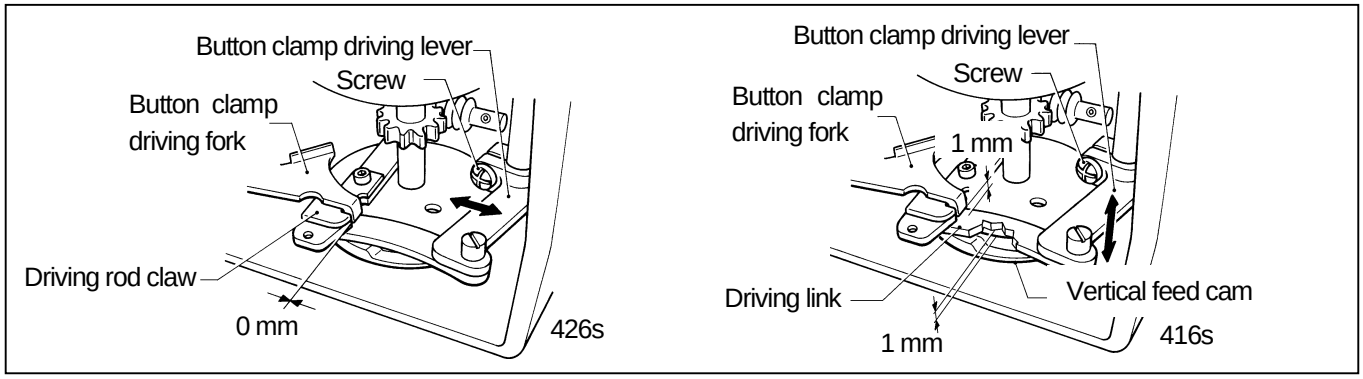
Adjust the position of the stitch control cam so that the pulley separates from the stop cam when the stopper bracket of the clutch body and the reference line on the stop cam are aligned at the final needle position.

5-10.Pawl of thread trimming lever



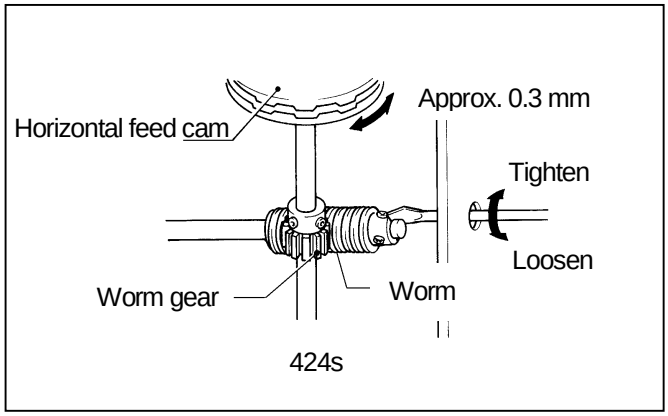
The clearance between the pawl and the number of stitches adjustment cam should be 0.5 mm.

5-11.Button clamp driving lever



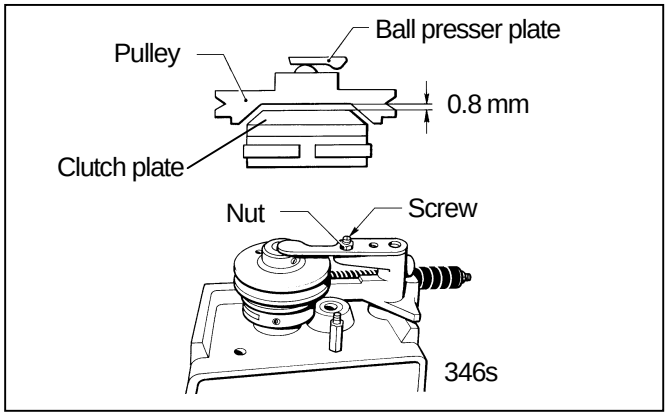
1. The end of the button clamp driving fork and the end of the driving rod claw are aligned.
2. The clearances between the tip of the button clamp driving fork and the driving link, and between the vertical feed cam and the driving link, should each be 1 mm.

5-12.Worm and worm gear backlash



Adjust the feed cam to obtain a backlash of approximately 0.3 mm.

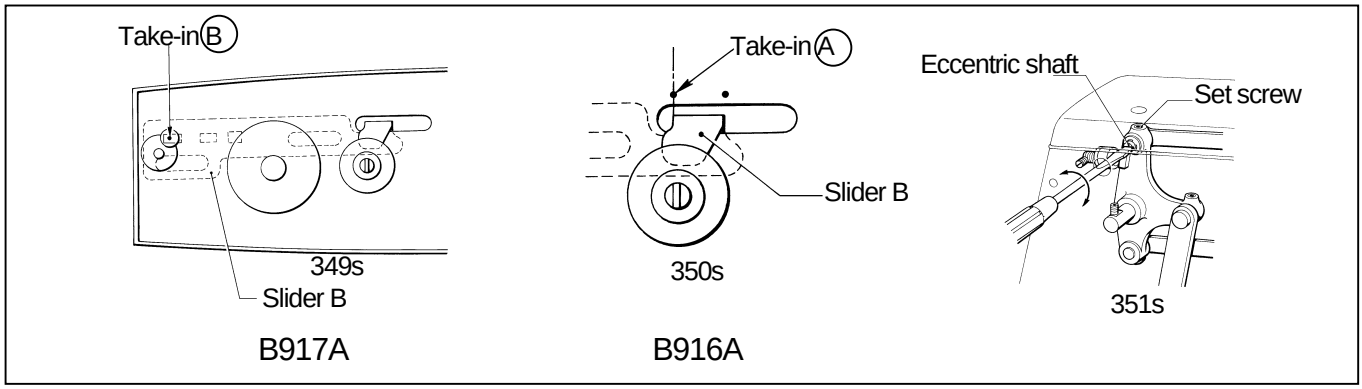
5-13.Pulley clearance in thrust direction



The clearance between the pulley and the clutch plate should be 0.8 mm.

5-14.Slider

< With the sewing machine in the stop condition >



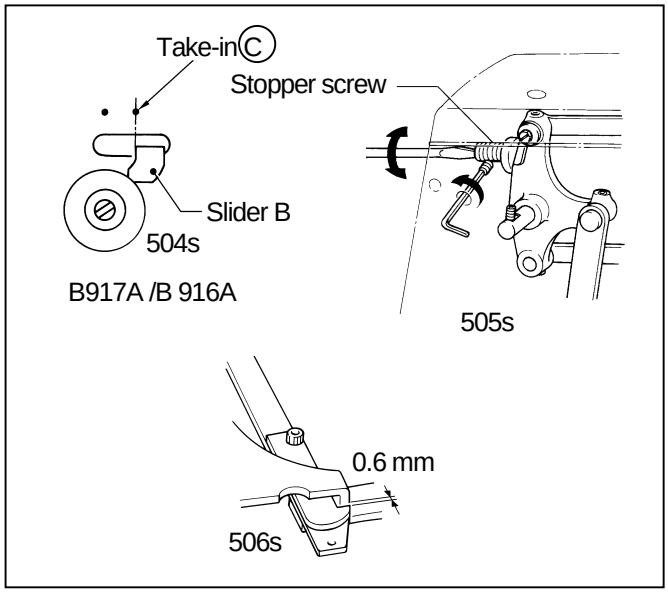
B917A

When the presser lifter pedal is depressed to lift the button clamp, the eccentric shaft should be adjusted so that take-in Ⓑ of slider B is at the center of the frame hole.

B916A

When the presser lifter pedal is depressed to lift the button clamp, the slider B side should be aligned with take-in Ⓐ by using the eccentric shaft.

< Sewing machine in start condition >



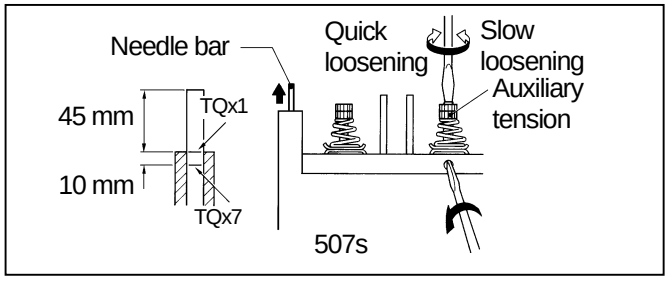
B917A / B916A

Depress the starting pedal and rotate the pulley two or three times (starting condition).

Using the stopper screw, adjust so that the slider B edge and take-in Ⓒ are aligned.

When adjusted as above, the clearance between the button clamp operating fork and the driving lever pawl should be 0.6 mm.

5-15.Auxiliary tension timing



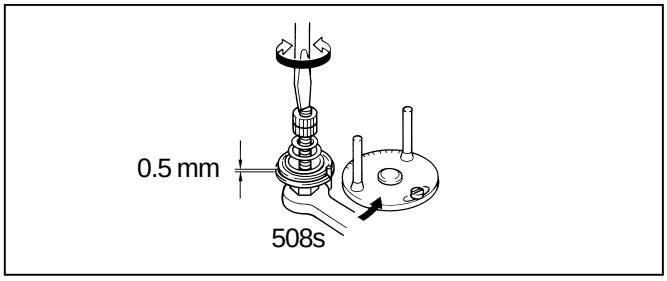
B917A

While the needle bar is raised and the reference line of the needle bar is aligned with the upper edge of the needle bar metal, the auxiliary tension should be loosened.

B916A

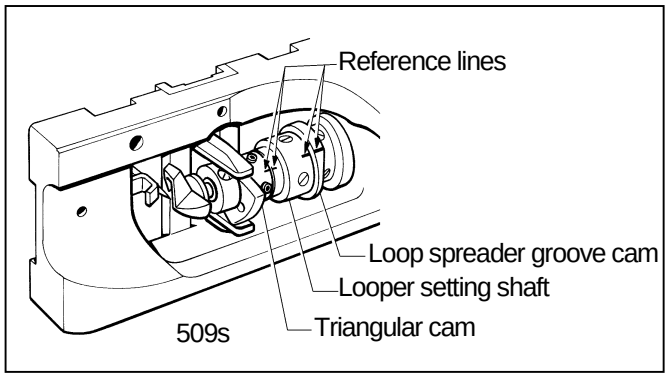
Add 1 mm to each reference line of the above alignment.

5-16.Thread tension timing



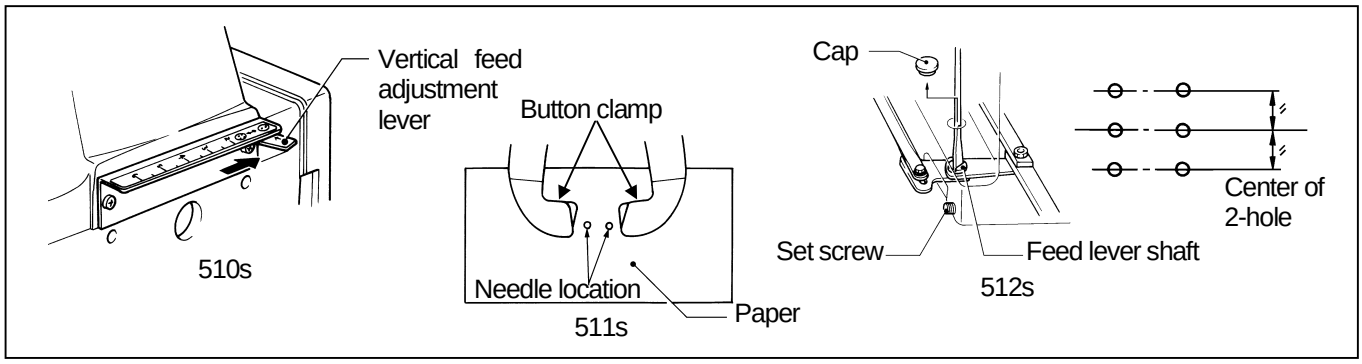
With the machine in the start condition, the tension discs should be 0.5 mm apart.

5-17.Loop spreader timing



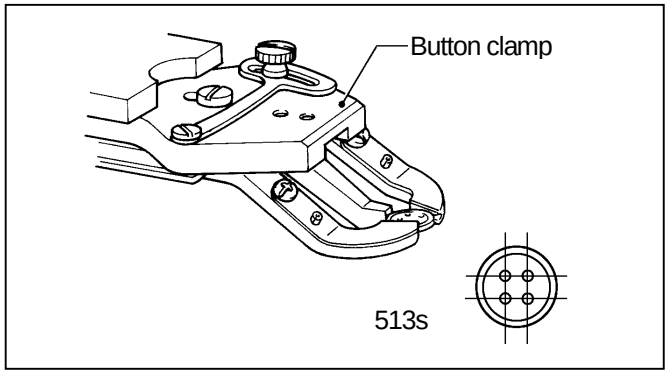
Align the reference line of the loop spreader groove cam with the looper setting shaft. And align the looper setting shaft with the triangular cam.

5-18.Forward and reverse feed



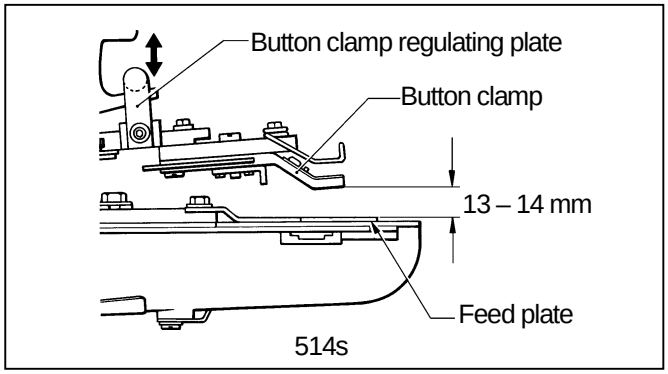
1. Align the vertical feed adjustment lever with the 2-hole ⚇.
2. Insert a piece of paper underneath the button clamp.
3. Mark the needle location at the 2-hole on the paper.
4. Align the vertical feed adjustment lever with the 4-hole ⚇, and again mark the needle location. Turn the feed lever shaft so that the center of the 2-hole is aligned with the center of the 4-hole.

5-19.Button clamp installation



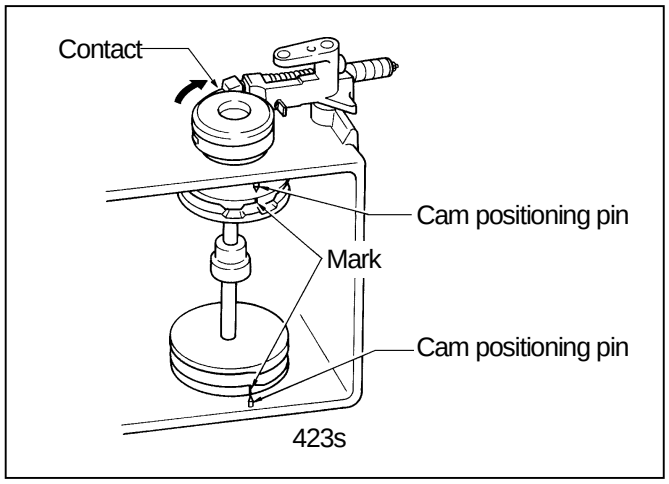
Place the button on the button clamp and set the scale of the horizontal feed and the vertical feed to the distance between the buttons. The needle should be centered over the button holes.

5-20.Elevation amount of button clamp



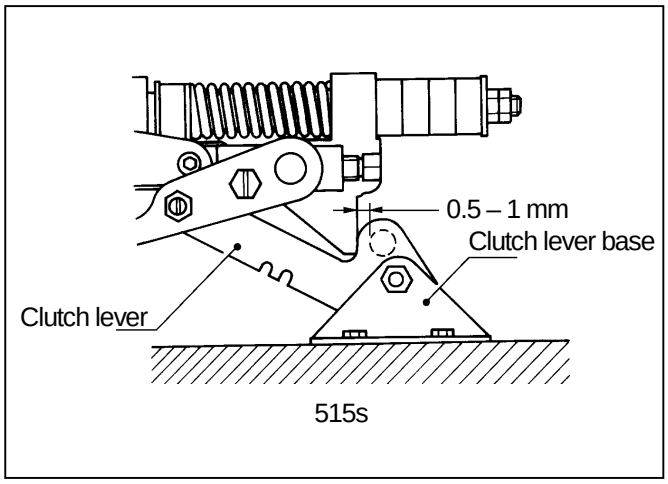
The distance between the upper part of the feed plate and the tip of the button clamp should be 13 – 14 mm.

5-21.Feed timing



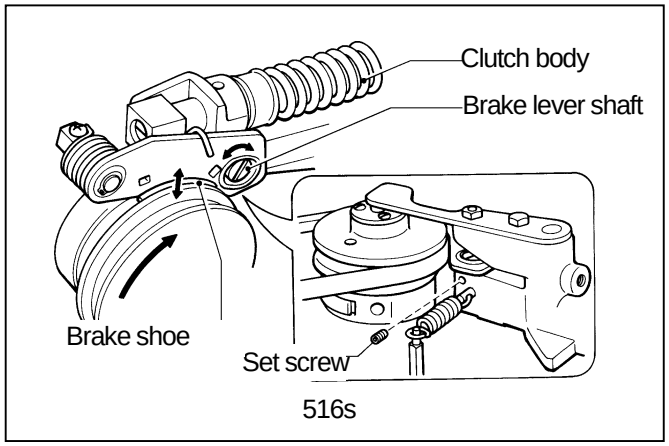
Adjust the feed cam so that the index on the feed cam is aligned with the cam positioning pin when the machine is in the stop position.

5-22.Clutch lever



Adjust the clutch lever base so there is a 0.5 to 1 mm gap between the clutch lever shaft and clutch when the machine is in the stop position.

5-23.Braking force

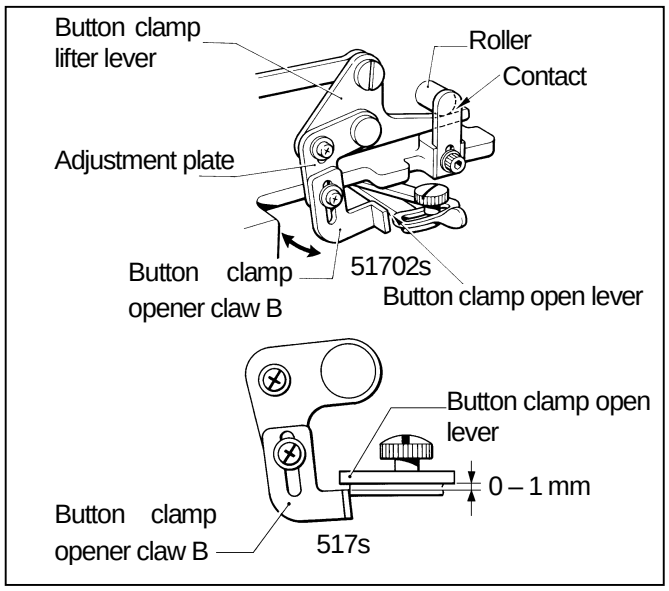


1. While pushing the clutch body down, turn the machine pulley two or more complete turns in the direction of the arrow.
2. Loosen the set screw at the lower part of the clutch body.
3. Turn the brake lever shaft until the brake shoe is at its lowest position.
4. Tighten the set screw to secure the brake lever shaft.

* If the brake is grabbing at low temperatures and low operating speeds and causing the machine to stop before the correct stopping position, it might be caused by one of the following problems. In such cases, raise the position of the brake shoe in step (3.) above.

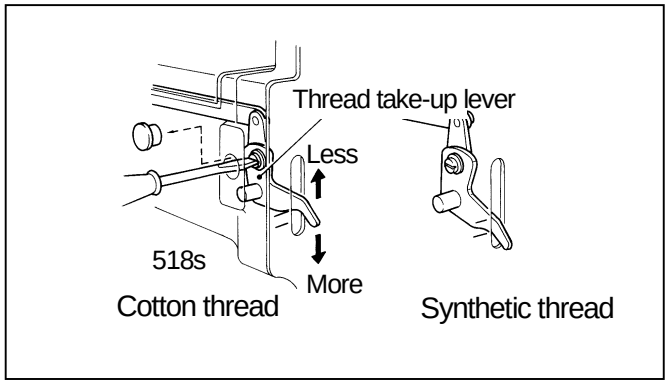
Work clamp lift amount is too small
Thread is not being trimmed

5-24.Button clamp opener (B917A)



1. When the pulley is turned and, at the final stitch, the Button clamp lifter lever and the roller contact, adjust the adjustment plate so that the button clamp opener claw B contacts the button clamp open lever at the same time.
2. In the above condition, adjust the button clamp opener claw B so that the clearance of the button clamp opener claw B and of the button clamp open lever is 0 – 1 mm.

5-25.Thread take-up lever



Adjust the thread take-up lever position according to the thread used.

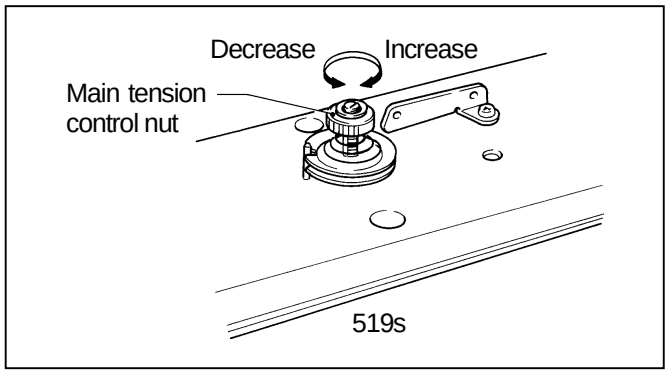
Cotton thread

With the machine in the stop position, set the bottom of the thread take-up lever to the top reference line.

Synthetic thread

With the machine in the stop position, set the bottom of the thread take-up lever to the bottom reference line.

5-26.Main tension

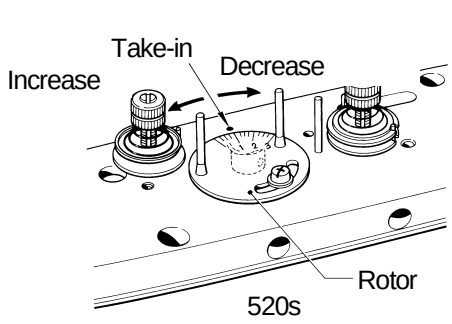


Turn the main tension control nut to adjust the thread tension.

B916A

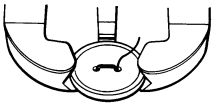
If, after attaching the button, long threads remain hanging from the back side of the material, adjust the main tension for stronger tension.

5-27.Rotor



520s

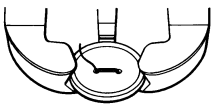
Fig. A



Thread remainder at first stitch

521s

Fig. B



Thread missed at first stitch

522s

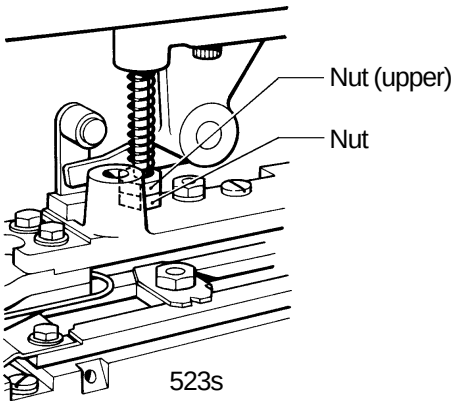
The standard position of the rotor is the position where, with the machine stopped, the 1.5 mark (B917A) is aligned with the take-in.

For B916A, it is where the 2 mark is aligned with the take-in. Increasing the scale setting increases the thread amount.

If the thread end hangs out at the first stitch buttonhole, reduce the rotor setting. (Fig. A)

If the thread end hangs out at the second stitch buttonhole, increase the rotor setting. (Fig. B)

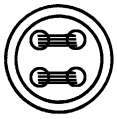
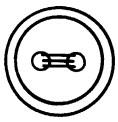
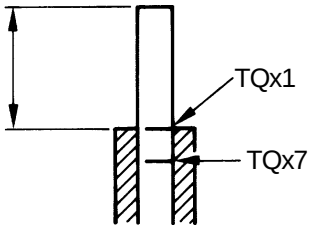
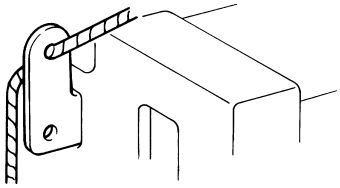
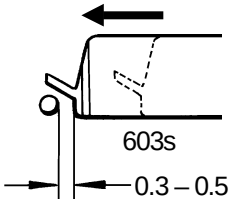
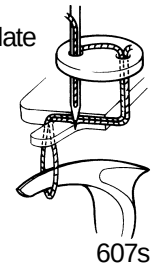
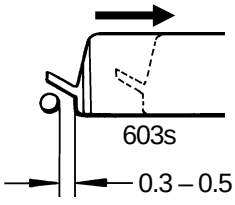
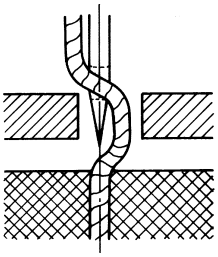
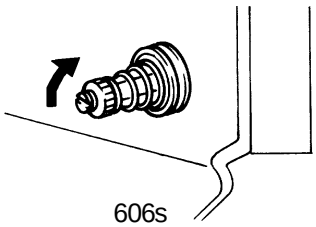
5-28.Button clamp pressure

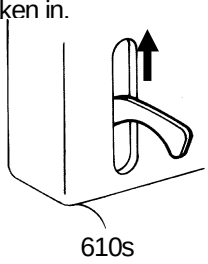
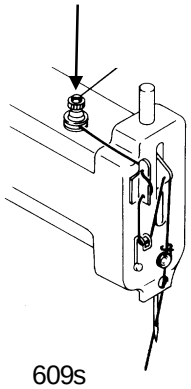
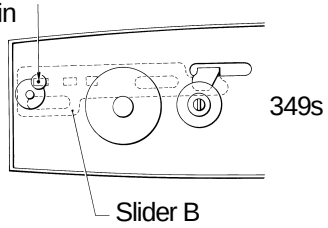
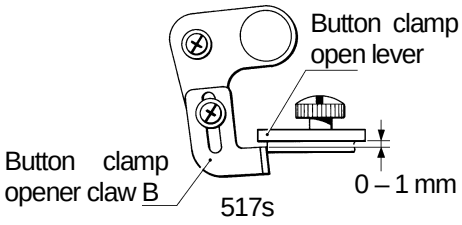
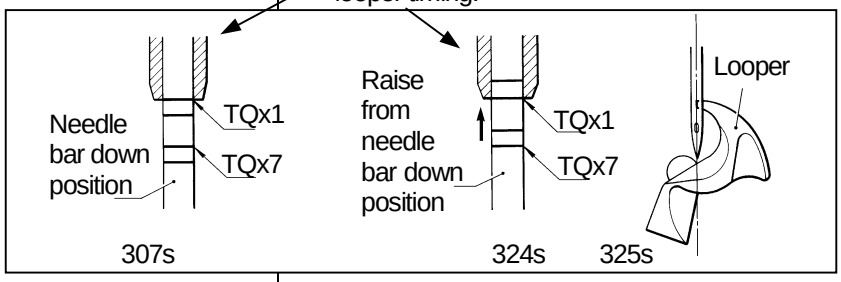
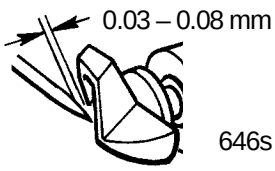
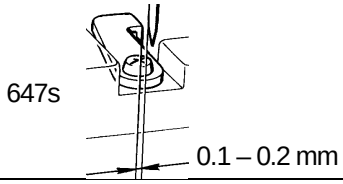


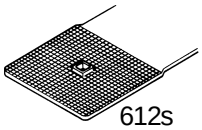
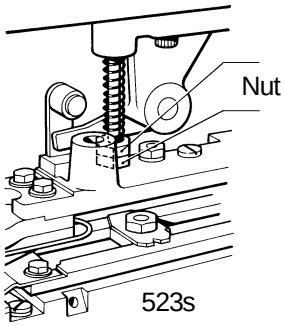
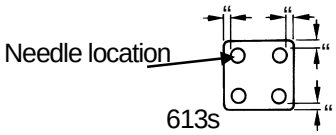
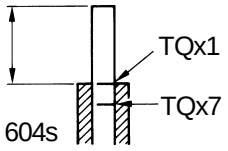
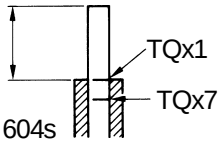
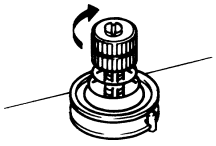
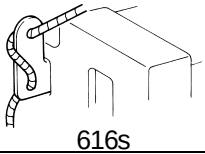
523s

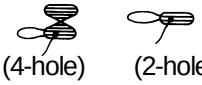
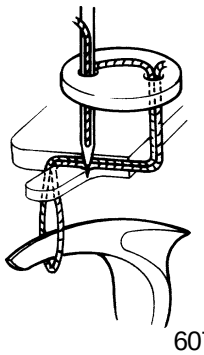
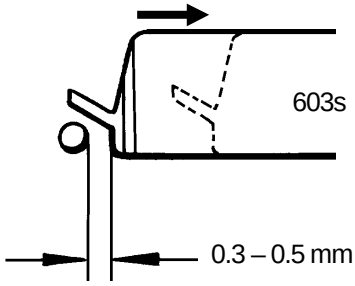
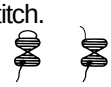
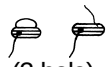
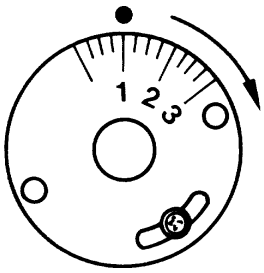
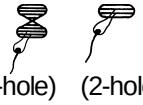
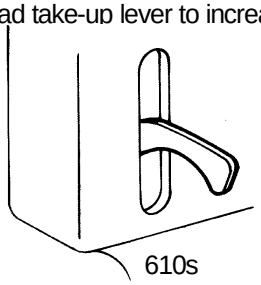
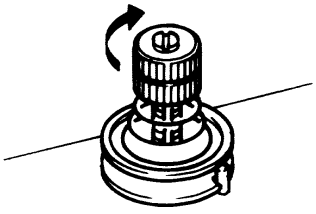
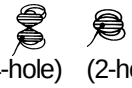
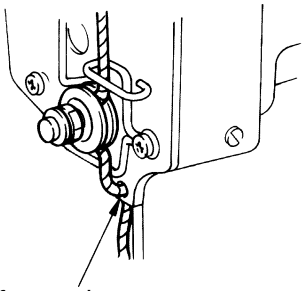
Loosen the two nuts, and turn the nut (upper) until the fabric will just hold without slipping when it is lightly pulled.

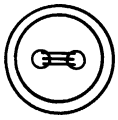
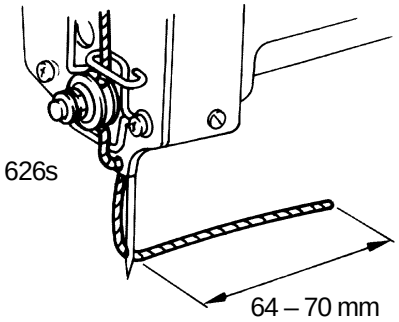
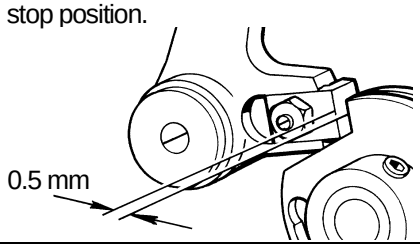
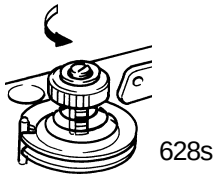
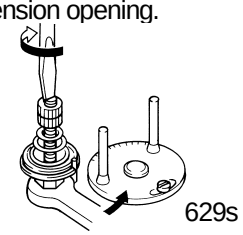
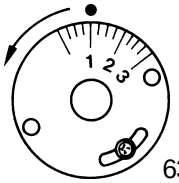
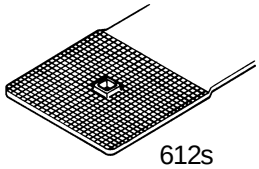
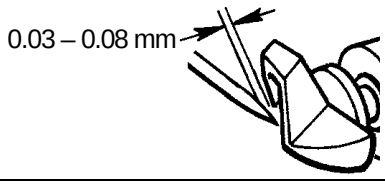
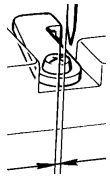
6. TROUBLESHOOTING

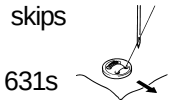
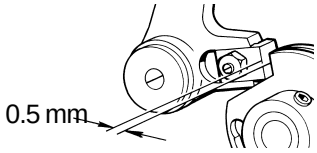
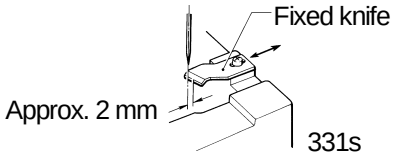
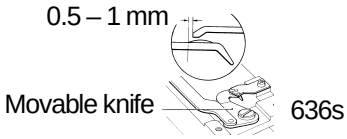
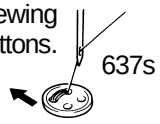
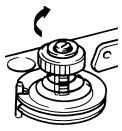
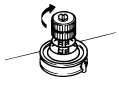
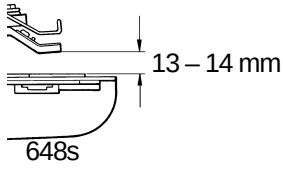
Problem	Cause	Solution	Page
1. Broken crossover stitch 601s  602s Not enough stitches  625s	Tension is too strong.	(1) Loosen the tension control nut on the main tension.	40
		(2) Lower the auxiliary tension control. B917A - 45 mm B916A - 46 mm  604s	38
		(3) Pass the thread through only one hole in the face plate thread guide when using 80 count cotton thread.  605s	
	Thread catches twice on the looper during loop spreading.	(1) Move the loop spreader position towards the needle. 	19 35
		(2) Increase the looper to needle gap.	20 35
	Loop spreader occurs during lock stitch sewing A : Below needle plate  607s	A : Move the loop spreader position away from the needle. 	19 35
	B : Above needle plate  608s	B : (1) Increase the sub tension  606s	
		B : (2) Use a heavier thread	

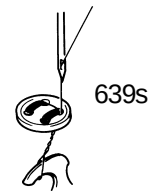
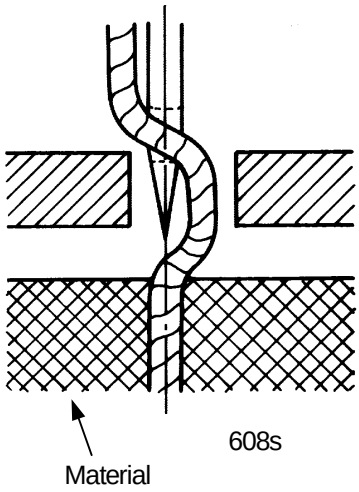
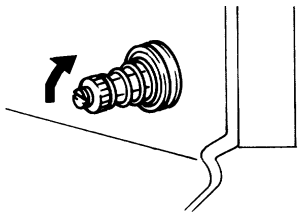
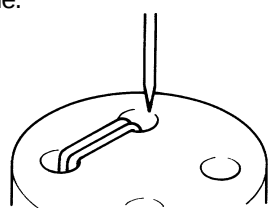
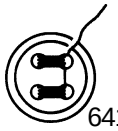
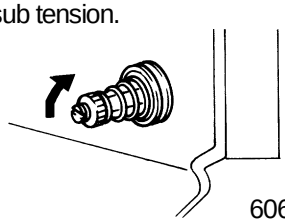
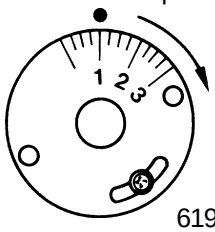
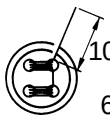
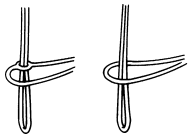
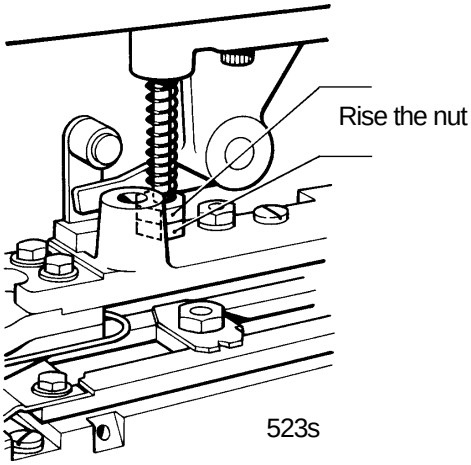
Problem	Cause	Solution	Page
2. Thread frays at final stitch (B917A) • Stitch is normal. • Thread frays between thread tension and material.	Thread take-up lever pulls too much thread.	Raise the thread take-up lever to decrease the amount of thread taken in.  610s	40
Thread tension  609s	The thread clamp is released too late.	Adjust so the take-in on slider B comes to the center of the frame hole when the button clamp is raised. Take-in  349s Slider B	26 37
	Button clamp opening is delayed, causing the button to be raised.	Adjust the button clamp opener claw stroke.  Button clamp open lever Button clamp opener claw B 0 – 1 mm 517s	40
3.Thread frays at stitch joints. 4-hole 2-hole • Insufficient thread remainder. • Stitch is too short. 61101s 61102s	Refer to "2. Thread frays at final stitch."		
	Excessive thread tension at main tension control.	Loosen the main tension control nut.	40
4.Thread breaks • Thread frays and breaks. • Thread breaks at different points. • Thread breaks and stitch skips simultaneously.	Looper does not catch thread.	(1) Adjust the needle bar height and needle to looper timing.  Needle bar down position TQx1 TQx7 Raise from needle bar down position TQx1 TQx7 Looper 307s 324s 325s	16 20 35
		(2) Excessive looper to needle gap.  0.03 – 0.08 mm 646s	20 35
		(3) Excessive needle to needle guard gap.  647s 0.1 – 0.2 mm	21 35

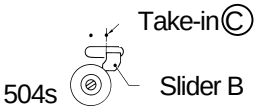
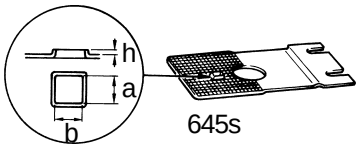
Problem	Cause	Solution	Page
4.Thread breaks • Thread frays and breaks. • Thread breaks at different points. • Thread breaks and stitch skips simultaneously	Inconsistent thread looping due to bunching of material.	(1) Use a platform feed plate.  612s	23
		(2) Increase the button clamp pressure.  523s	41
	Needle sidewise movement	(1) Feed plate position not adjusted to the needle location.  613s	23
		(2) Button clamp holder position not adjusted to the needle location.	39
5.Improper thread tension (Thread tightening is loose.)	Weak thread tension	(1) Loosen the tension control nut on the main tension.	40
		(2) Raise the auxiliary tension control. B917A - 45 mm B916A - 46 mm  604s	38
6.Improper loop spreading (thread remains at crossover stitch joint) (4-hole) (2-hole) • Occurs at 16 (12) stitches. • Occurs at 9, 10, 11 (7, 8, 9) stitches. • Occurs frequently when sewing 2-hole button. • Rarely occurs when needle traces a Z-pattern.	Thread tension is too great at the 8 th (6 th) stitch.	(1) Loosen the tension control nut on the main tension.	40
		(2) Raise the auxiliary tension control. B917A - 45 mm B916A - 46 mm  604s	38
	Thread tension is too weak.	(1) Excessive auxiliary tension.  615s	38
		(2) Pass the thread through both holes in the face plate thread guide.  616s	
	Looper tightens the thread too much on the second stroke during loop spreading.	(1) Replace the loop spreader.	35
61401s 61402s		(2) Replace the looper.	35

Problem	Cause	Solution	Page
7.Thread remains in loop on odd stitches  (4-hole) (2-hole) • A frays appears in the loop. • Occurs with thread breakage. 61401s 61402s	Needle catches the stitch behind the material, preventing thread tightening.  607s	(1) Move the loop spreader away from the needle.  	19 35
		(2) Replace the loop spreader.	
8.Thread end not properly wound on the first stitch.  (4-hole)  (2-hole) 61701s 61702s 61801s 61802s	Rotor takes up too much thread.	Decrease the thread take-up amount.  619s	41
9.Stitch joint varies  (4-hole) (2-hole) Occurs when needle pierces material on final stitch.	Insufficient thread take-up by take-up lever	Looper the thread take-up lever to increase thread take-up.  610s	40
	Low thread tension	Increase the thread tension.  615s	
62001s 62002s	Thread tension opens too early.	Adjust slider position.	37
10. Insufficient thread tightening  (4-hole) (2-hole) 62201s 62202s	Thread stuck in thread path.  Occurs frequently near sub tension. 626s	Check thread threading.	

Problem	Cause	Solution	Page
11. Stitches skip at sewing start 624s (4-hole)  625s (2-hole) • Not enough stitches	Insufficient needle thread length 	(1) Decrease the thread cutter lever to stitch control cam gap when the machine is in the stop position. 	18 36
		(2) Decrease main tension control setting. 	40
	Not enough take-up thread supplied to the rotor.	Increase thread tension opening. 	38
	Insufficient rotor thread take-up.	Increase thread take-up. 	41
	Needle thread loop is small. (The loop will drop if the loop is too big, especially when using heavy thread.)	(1) Adjust the needle to looper timing.	20 35
		(2) Use a platform feed plate. 	23
	Looper misses the thread.	(1) Check the needle installation. (The long groove should be to the front.)	
		(2) Check the button clamp and feed plate installation positions.	
		(3) Adjust the needle bar height.	16 35
		(4) Adjust the needle to looper timing.	20 35
		(5) Decrease the needle to looper gap. 	20 35
		(6) Decrease the needle to needle guard gap. 	21 35

Problem	Cause	Solution	Page
12. Final stitch skips  631s • Occurs together with thread cutter errors. • Stitch comes out when the material is removed from the machine.	Looper misses thread.	Refer to “11.Stitches skip at sewing start” .	46
13. Thread cutter errors (B917A) 635s • Looper catches thread normally in stop position. • Stitches are properly formed.	Movable knife misses thread.	Delay thread trimming timing.  0.5 mm 627s	18 36
	Movable knife and fixed knife do not cut properly.	Replace the movable knife. Sharpen or replace the fixed knife.	21 22
	Improper movable knife position	(1) Check the fixed knife position.  Fixed knife Approx. 2 mm 331s	21 35
		(2) Move the movable knife away from the looper.  0.5 – 1 mm Movable knife 636s	22 36
• If the thread does not cross when sewing 4-hole buttons.  637s • Occurs when sewing the first half of the button.	Movable knife misses thread due to machine stop feed assembly position.	Adjust so the vertical feed cam mark is aligned with the cam positioning pin when in the stop position.	30 39
14. Thread cutter miss (B916A) 635s • Looper catches thread normally in stop position. • Stitches are properly formed.	Insufficient thread tension when final stitch is tightened.	(1) Increase tension at main tension.  638s	40
		(2) Increase thread tension.  615s	
	Insufficient tightening of final stitch.	(1) Check button clamp lift stroke.  13 – 14 mm 648s	
		(2) Decrease brake strength.	

Problem	Cause	Solution	Page
15. Thread parts at stitch link  639s • Thread winds onto looper in machine stop position. • Occurs frequently when using heavy thread.	Thread splits on material top.  608s Material	(1) Increase the sub tension.  606s	
		(2) Use a finer thread.	
		(3) Decrease the number of stitch.	
		(4) Shift the needle location to the outside of the button hole.  640s	
16. Thread remains on material top at first stitch.  641s • Normal number of stitches	Insufficient sub tension	(1) Increase sub tension.  606s	
		(2) Decrease rotor thread take-up.  619s	41
A looper is formed at the second stitch between the material and the button, or the thread from the first stitch interrupts the second stitch between the material and button.  10 – 15 mm 642s 643s  64302s 64303s	Stitches formed improperly at sewing start (material not fed properly).	Increase the clamp pressure so that the button clamp holds the material firmly.  Rise the nut 523s	41

Problem	Cause	Solution	Page
17. Clutch does not engage. (Machine stops before the stop position.) • Button clamp lift stroke is too small. • Thread is not cut.	Motor is not turning fast enough for the needle bar to advance to the stop position (standard motor speed is 1500 rpm).	Use a standard pulley. 50Hz-----N75 pulley 60Hz-----N65 pulley	
	Brake is too tight.	Brake is too loose.	39
18. Machine makes abnormally loud sound when stopping.	Motor is turning too fast and does not decelerate properly. (This occurs when the N75 pulley is used with a 60 Hz power supply.)	Use a standard pulley. 50Hz-----N75 pulley 60Hz-----N65 pulley	
	Brake is weak.	Increase the brake tension.	39
19. Button clamp does not rise.	The button clamp driving fork to operating lever pawl end gap is too large.	Adjust the gap to 0.5 to 1 mm.	36
	Driving lever pawl is worn and teeth do not mesh properly.	Replace the driving lever pawl.	
	Driving lever pawl does not mesh at top dead center of the button clamp driving fork stroke.	Screw the set screw in so there is 0.6 mm gap at the driving lever pawl. (The end of slider B should be aligned with take-in Ⓒ on the top cover at this time.)  	37
20. Button does not drop at the stop position. (B917A)	The button opener does not open sufficiently for the current button diameter.	(1) Set a button in the button clamp and adjust the size.	
		(2) Set a button in the button clamp and remove any play with the size adjustment plate.	
	Improper button opener claw B adjustment.	(1) Adjust the timing of button opener claw B.	40
		(2) Adjust the gap between button opener claw B and the button opener rod to 0 – 1 mm.	40
21. Button pops out of the button clamp at the sewing start.	Button clamp is not adjusted to the current button size.	Replace the button clamp. Use button clamp set A (S03701-001) for small buttons (10 – 20 mm dia.). (factory equipment) Use button clamp set B (S03633-001) for large buttons (10 – 30 mm dia.).	39
22. Needle breaks	Feed adjustment lever improperly positioned.	Set the vertical feed adjustment lever to the buttons in use.	
	Refer to item “21.” above.		
	Needle location is improperly adjusted for the button hole.	(1) Adjust the needle location to the button hole gaps with the vertical feed adjustment lever and horizontal feed adjustment nut.	
		(2) Adjust the button clamp installation position.	
		(3) Adjust the feed plate installation position. Use feed plate A (S03476-101) (factory equipment) a = 4.8, b = 4.8, h = 1 for small buttons. Use feed plate B (S03630-101) a = 4.8, b = 4.8, h = 0 for concave buttons. Use feed plate C (115085-001) a = 7, b = 7, h = 0 for large buttons.  	23
		(4) Adjust the forward and reverse feed.	38
		(5) Adjust feed cam play to approx. 0.3 mm . (Adjust with the worm and worm gear backlash.)	37

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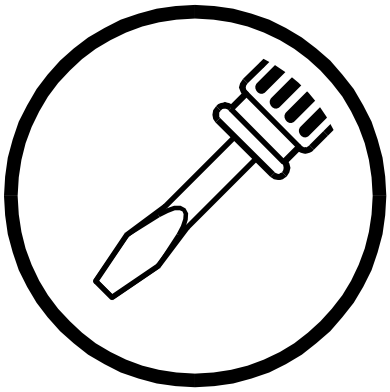

SERVICE MANUAL

BROTHER INDUSTRIES, LTD. NAGOYA, JAPAN

Printed in Japan

118-916/917
I0070790
2000.07. F (1)